PROTECTION ON TRACTOR BREAK-AWAY

See Advert. Page 6

MODERN TRANSPORT

"THE TIMES" OF THE TRANSPORT WORLD

A NEW AIRPORT FOR LONDON

See Page 3

VOL. LXXIX No. 2046 [*Registered at the G.P.O. as a newspaper*] LONDON, JUNE 14, 1958 PRICE NINEPENCE

CURRENT TOPICS

A Happy Congress

FOR original thought in discussion, for the interest of its visits, and for the gaiety of its social occasions the Dublin congress of the Institute of Transport, held under the presidency of Sir Reginald Wilson, will long be remembered. The Irish section is one of the youngest in the Institute but it had gone ahead with that cheerful resolution which typifies the country, quite confident that everything would be justified when the occasion was reached. That faith was fully justified and even the journey on the Radio Train to Killarney through a decidedly damp countryside was followed by a dry afternoon so that those who knew not the beauties of the lakes could see them for the first time from the heights of a jaunting car. All this apart there was the warm friendliness of everyone and a constant desire to meet any special wishes. The pressing invitations to come again and spend more time looking at one thing or another will undoubtedly be accepted in very many cases, and as habitual travellers to Ireland, we can assure those invited that it will be worth while going.

Support from the Young

ON the more serious side of the congress, one feature to which Sir Reginald Wilson rightly called attention was the number of younger members taking part. It was, as he said, most encouraging and he hoped it was establishing a practice which would apply also to the ordinary functions of the Institute. Absence through transport troubles in Britain of a number of members including Sir Brian Robertson was unfortunate but the president presented his paper for him in the form of an interesting analysis and the discussion certainly produced a wide variety of opinions. How much further the organisation of transport should be carried was certainly not determined and it was only proper for an Irish member to point out that the situation there was far more simple because nationalisation of industries did not involve politics. Whether he was right in relating the British occupation of his country to that is, of course, more debatable. The next congress is in Copenhagen where there will be much to see and enjoy but Commander A. J. O'Brien Twohig, the chairman of the section, and all his cohorts can feel that they achieved a congress which it will be hard to beat for happiness of spirit.

The Opening of Gatwick

BUILT in two years at a cost of some £7 million the new Gatwick Airport was opened last Monday by Her Majesty the Queen. As with most airports its site has been the subject of controversy for years, but there is still nothing basically wrong with the reasoning of Airports, Limited, when it established the original airport south of the present site. The attraction of a direct railway link with Central London is indeed considerable, while many airlines look with pleasure upon the prospect of handling all passengers at one place—the airport. The incorporation of a substantial number of new ideas will result in the operations there being watched with particular interest. The use of a finger for passengers to proceed to and from the aircraft is, of course, quite widespread in the United States but we hope that the scrambles we have seen there will not develop over here. The appearance of the building is, we think, disappointing. The use of natural colours and reliance upon advertising material and passengers to provide the contrasts savours horribly of architectural mumbo-jumbo. We doubt whether the passengers will worry a lot but they may find the surroundings a bit depressing in the event of a delay.

Bus Strike and the Tubes

AN attempt last Monday by a few members of the N.U.R. to dislocate working on the London Underground by indulging in a one-day protest strike on behalf of the busmen caused little further inconvenience to the public, and most of the services ran normally. The effort was made despite an earlier appeal by Mr. Sidney Greene, general secretary of the union, whose president, Mr. C. W. Evans, said they did not want to jeopardise their negotiating machinery which was the finest in Britain. Those who in recent weeks have had to undergo the daily ordeal of tube travel must have marvelled at the effrontery of the leader of the unofficial movement—one Thomas Doubtfire—in giving as his reason for such action the fact that the tube crews (isolated and secure in their own accommodation) had "gone through torture because of overcrowding of trains!" The real reason, of course, was failure of the further talks between the L.T.E. and the busmen's union on June 5, after the air had been cleared by the T.U.C.'s refusal to countenance an extension of the strike. The L.T.E. refused the union's proposals that the 8s. 6d. a week for the Central busmen should operate from March 12, instead of from the resumption of work; that the wages of the Green Line coach drivers (which have yet to be negotiated) should be similarly raised from the same date; and that the pay of the 12,000 other workers, which the L.T.E. had already agreed to review and—if an increase were conceded—to raise from July 2, should in any case be increased and dated from the day work was resumed. To meet these demands would have meant a departure from principles which Sir John Elliot has repeatedly said the Executive was determined to uphold. A subsequent delegate conference rejected by a narrow majority on the advice of Mr. Cousins, no doubt actuated by the tenor of the previous day's T.U.C. meeting, a motion that the strike should be extended to other members of the T.G.W.U., such as petrol distribution and power station workers.

Statement by the T.U.C.

NOT that Mr. Cousins found satisfaction in the T.U.C. decision, which he reviewed critically in a speech to a rally of union members at Oxford on Saturday night. This impelled Sir Vincent Tewson, the T.U.C. general secretary, to the unusual course of issuing a statement declaring that the decision was not opposed by anybody not involved in the dispute. The union, he said, were not asking for—and indeed would have resented—any interference by the general council in the conduct of negotiations as distinct from any efforts that might be made to get negotiations resumed; that was not a complaint, but a statement of fact. The general council was asked to declare what it and affiliated unions should do and the discussions centred mainly upon the extension of the stoppage both on a restricted and on a total front. Furthermore, the discussion did not take five hours because of any acrimony but because of the detail of the review and the readiness of members to express their opinions in full knowledge of the position and with a knowledge of their responsibilities to the movement as a whole. They spoke also, of course, in the light of the knowledge of their own members, their organisations, and the industries with which they were concerned. The statement concluded: "Mr. Cousins heard the views of members at first hand and, even if he was disappointed, it was typical of his courage that, according to reports, he opposed a majority recommendation of the London busmen's negotiating committee that the strike should be extended." The Government attitude to the strike was revealed by the Minister of Labour in a speech at Ealing last Monday (reported on page 13). Mr. Macleod effectively countered the absurd claim heard in trade union circles that it is the Government which is trying to sabotage wages arbitration.

Outmoded Industrial Action

MEANWHILE the strike continues, day by day demonstrating the stark stupidity of such stoppages. That its effects on the trade union movement will be far-reaching and will no doubt incite a re-examination of the strike weapon is the view of the general secretary (Mr. Bryn Roberts) of the National Union of Public Employees. There would be a greater inclination, he said in a speech at Coleford, Gloucestershire, on Saturday, to rely on new forms of political action as being less costly and more effective than strikes in achieving fair shares in industry and the nationalised services. "If it is accepted that in many industries and services there is no money available to pay increased wages, and that this is due to political policy and carrying military and other burdens beyond our capacities, strike action can only aggravate the situation. The solution is a political and not an industrial one." The bus strike would serve a good purpose by spotlighting this fact. Speaking at Woking Mr. Harold Watkinson, Minister of Transport, pointed out that every day the strike continues worsens the financial position of London Transport and of the men on strike; it helps no one and harms a great many people. Struggles of this kind were completely outmoded; no greater disservice could be done to the prosperity of this country than to try to fight the old, bitter industrial battles of long ago: we all lose and our foreign competitors win. And, in the good old-fashioned style, Mr. Cousins asserts that the London busmen could stay out until Christmas if necessary, provided every member of the T.G.W.U. gave 2s. 6d. in support!

LEADING FEATURES IN THIS ISSUE

	PAGE
Portrait	
Mr. C. M. Vignoles, C.B.E.	9
Special Articles	
Towards Improved Railway Operation	2
Opening of Gatwick Airport: Direct Rail Link with London	3
New Motive Power Depot at Thornaby: Two Replaced at Cost of £1,250,000	5
The Institute in Dublin: A Most Successful Congress	7
Buses in Scotland: Town Planning Conference	9
German Railbuses: Eastern Region Gets Five W.M.D. Units	10
Chester Wagon Repair Shop.. ..	10
Off-Street Unloading: Birmingham Shows the Way	11
Public Cleansing Conference.. ..	12
Two Centuries at Middleton: Vicissitudes of Brandling's Line (Cont.)	13
Minister on London Bus Dispute ..	13
Modern Airways Section	
Flight Development of the Rotodyne	6
Regular Features	
Commercial Aviation	9
Forthcoming Events	2
Important Contracts	14
Lorry, Bus and Coach News.. ..	4
News from All Quarters	8
Shipping and Shipbuilding	14
Social and Personal	15
Tenders Invited	14

Morris-Commercial Show

FOR the second time in less than a month the British Motor Corporation this week staged a private exhibition of over 100 commercial vehicles at the Longbridge works of the Austin Motor Company. Complementing the earlier display the exhibits, which attracted visitors from all parts of the country, this time bore the insignia of the Morris component of the corporation. Not unnaturally many of the vehicle types which had been seen before appeared again under Morris-Commercial auspices but this in fact strengthened the emphasis on the wide diversity of tasks to which B.M.C. vehicles can be applied. A range of industrial equipment and contractors' plant based on Nuffield tractors was also on view. Live demonstrations in various sections of the exhibition included a cross-country circuit by the new Martin-Harper four-wheel-drive conversion of the normal-control 5-ton vehicle which was specially developed for overseas markets at the request of Nuffield Exports, Limited. The double-deck box van, on the 7-ton forward-control chassis, fitted with roller tracks and tailboard loader for rapid handling of the palletised load was noteworthy among the examples of bodywork designed to take advantage of up-to-date mechanical-handling equipment. Among the range of lighter vehicles was an attractive ice-cream bar. Topical interest attached to the Minibuses which have now been altered to comply with the latest p.s.v. regulations.

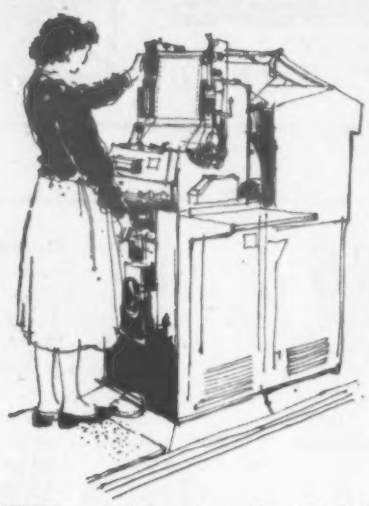
A Possible Superfluity

SINCE the London bus strike started passengers to and from London Airport Central who normally used the coach service twixt there and West London Air Terminal have had either to fend for themselves or to use the Southern Region trains between Waterloo and Feltham. A coach service is provided between Feltham and London Airport and the return from the Institute of Transport congress in Dublin gave us an opportunity to see how it worked. The fact that the trains run only half-hourly is, of course, a disadvantage but as it happened we had only a few minutes to wait. In the upshot we found that the time from our emergence from customs to arrival at Waterloo was 68 min. and we don't think that anyone could complain at that. Furthermore we were far better placed than at Gloucester Road for reaching most parts of London. So far as outward bound flights are concerned, all handling is done at the airport and we imagine that the result of the bus strike may lead British European Airways seriously to consider whether its coach service is really necessary.

Crown Agents' Conference

CONVENED by the Crown Agents for Oversea Governments and Administrations, the fifth biennial conference on Standardisation of Railway Mechanical Equipment was held in London last month. It was attended by delegates and observers from various overseas railways and representatives of the British Standards Institution, the Locomotive and Allied Manufacturers' Association and the Railway Carriage and Wagon Building Association. Opened by Sir Hilton Poynton, Joint Deputy Under-Secretary of State, Colonial Office, the conference was presided over by Mr. R. W. Taylor, engineer-in-chief to the Crown Agents, and addressed by Mr. D. C. Brown, their chief mechanical engineer. A wide discussion on a variety of subjects ensued. Visits were paid to the Acton works of C.A.V., Limited, to see demonstrations of automatic gearchanging control, fuel injection and other equipment; to the Falkirk rolling mills of the British Aluminium Co., Limited, and to the Glasgow works of the North British Locomotive Co., Limited, where the visitors saw 2,000-h.p. and 1,000-h.p. diesel-hydraulic locomotives and several 1,000-h.p. diesel-electrics under construction for British Railways. They were also guests at a reception given by the Crown Agents and at a cocktail party offered by the Locomotive and Allied Manufacturers' Association.

"Of course, the idea of a computer attracted us—that's why we consulted Powers-Samas"



AND THEN . . . And then it was time to talk it over with the experts, to make a realistic assessment of the needs of the company—a medium-sized organisation, understandably interested in a computer, but with a limited budget for re-equipment. And, in fact, with needs that simply did not yet justify the installation of electronic equipment . . . . . But needs which could still be adequately met with Powers-Samas highly economical punched card data processing machines—the most practical and efficient accounting control for the small and medium sized business. And later, when working needs justify it, Powers-Samas electronic equipment can be integrated with the existing installation.

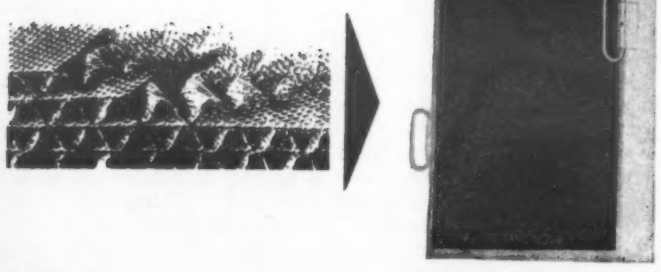
Put your accounting problems before

POWERS-SAMAS

the world's leading makers of electronic and mechanical data processing equipment

POWERS-SAMAS ACCOUNTING MACHINES (SALES) LIMITED,
POWERS-SAMAS HOUSE, HOLBORN BARS, LONDON, E.C.1.

Far-Air air filter



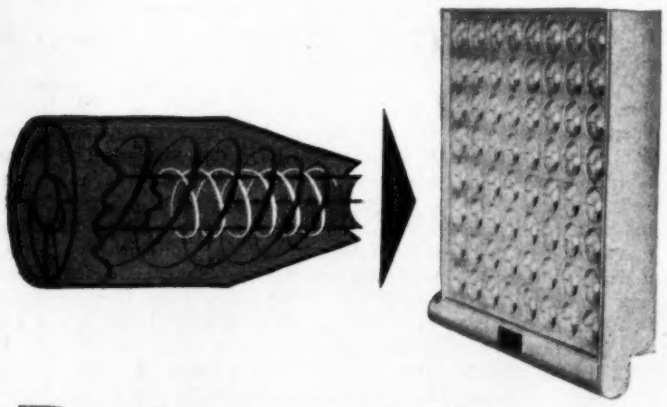
Maximum efficiency and minimum pressure loss are important characteristics of the FAR-AIR filter. Easily accessible and washable elements are used.

Their design is such that **a Far-Air element 20″ x 20″ x 2″ will hold 25 oz. of solids of 2.54 sp.g. without loss of efficiency**

INTERMIT LTD. has set up a nation-wide filter cleansing service to provide low-cost maintenance.

An automatic 3-stage washer of FAR-AIR design is available for large installations, where the cost of a special machine is justified.

2 revolutionary new **filtration principles**



With extremely high efficiency on particles in the range below 5 microns, the ROTONAMIC multiple-tube cyclonic air cleaner is close to 100% efficient in the removal of larger particles.

There are no moving parts, and the ROTONAMIC therefore needs no maintenance. Solids separated from the air are simply collected from a bin.

Rotonamic

multiple-tube cyclonic air cleaner

FAR-AIR LICENCED MANUFACTURERS FOR EUROPE

INTERMIT LIMITED

BRADFORD STREET . BIRMINGHAM

Phone: Midland 7981

product of Birfield Group experience and resources

MODERN TRANSPORT

Published Every Friday
RUSSELL COURT, 3-16 WOBURN PLACE, LONDON, W.C.1
Telephone Number: TERminus 0303 (3 lines)
Telegraphic Address: Transpubco, Westcent, London

ANNUAL SUBSCRIPTIONS
BRITISH ISLES, 35/-; CANADA, 32/6;
ELSEWHERE ABROAD, 35/-
payable in advance and postage free

The Editor is prepared to consider contributions offered for publication in MODERN TRANSPORT, but intending contributors should first study the length and style of articles appearing in the paper and satisfy themselves that the topic with which they propose to deal is relevant to editorial requirements. In controversial subjects relating to all aspects of transport and traffic this newspaper offers a platform for independent comment and debate, its object being to encourage the provision of all forms of transport in the best interests of the community.

We desire to call the attention of our readers to the fact that Russell Court, 3-16 Woburn Place, London, W.C.1, is our sole London address, and that no connection exists between this newspaper and any other publications bearing somewhat similar titles.

Towards Improved Railway Operation

IN the current issue of the Commission's *British Transport Review* Mr. R. F. Harvey, lately chief operating and motive power officer, British Railways Central Staff, provides a summing up of the series of articles which over a long period have been appearing in this official journal under the title *Towards Fuller Employment*. Officers of British Railways have contributed to the series which, as a guide to the better and more effective user of plant and equipment, has been both instructive and illuminating. On the subject of freight rolling stock, totalling 1,100,000 wagons each averaging a loaded journey every 10 days, the author points to the enormous bearing which the cost of such a fleet must have on rates and charges and to the need for getting more use out of it and, if possible, reducing it. Reduction by 100,000 wagons has recently been announced, and Mr. Harvey speaks of the possibility, as the total stock becomes more limited and manageable, of more effective control by the use of improved communications and electronic devices. To get the most out of them he regards the control of individual wagons as an absolute necessity; certainly nothing less can satisfy the customer and give him a service reliability approaching that of road transport. On this aspect he refers appreciatively to the experiments now being made by London Transport on an electronic system of vehicle identification and to those also being carried out on a limited scale by British Railways in connection with electronic location of wagons. As regards coaching stock, the regions distribute their own allocations and lend vehicles to each other to meet peak requirements. But there is doubt whether the present system enables the best use of marginal stock; there is indeed scope for an improved control, which must inevitably be national rather than regional.

Possibilities with New Power Units

IN the replacement of steam locomotion the high capital and maintenance costs of the new power units will require their intensive use, implying a complete recasting of service diagramming; Mr. Harvey states that the officers responsible for such planning must have no regard to regional boundaries and must not be unduly impressed by the demands of the costing service to keep the workings simple enough to enable detailed costs to be derived. The first essential, he says, will be to use the equipment properly and well-nigh continuously, and those who are required to work out the cost must use their ingenuity in doing so. The average availability figure for British Railways locomotives is now roughly 84 per cent; it is believed that 85 per cent represents under present conditions the possible maximum while allowing for all the stipulated period and mileage examinations and also for proper servicing, but diesel locomotives should yield a higher figure. Moreover, diesel and electric main-line locomotives are suitable for both passenger and freight workings; thus they will further the former Railway Executive's policy to concentrate on mixed traffic locomotives, a fact which should simplify diagramming and provide opportunities for improved usage. Under those conditions it might be possible to convert availability from its present daily basis to an hourly basis (as is the practice in many other countries, it seems). The time elapsing between the locomotive going into the motive power depot until the depot reports it once again ready for traffic is debited to the motive power department; from that point onward time is debited to the traffic department, whether or not the unit is actually ordered into traffic. The writer warns that many motive power depots will have to be improved if servicing of the new locomotives is to be carried out effectively, and the staff will have to be trained to know and appreciate the power and limitations of these units.

Need for Punctuality

IF full advantage is to be taken of the continuous brake on freight trains schedules must be tightened; services must be run with absolute punctuality, and shunting and marshalling be carried out only when there is no alternative. The approach to the operating problem may well be to devise services which are economic and efficient and then, by the use of differential rates and fares, endeavour to fill the services which can best be provided by the equipment. "We cannot continue to provide a mediocre service daily all over the country," states Mr. Harvey. "Rather we should concentrate on providing an efficient service between the points where we can handle the traffic best and leave the remainder for our competitors. That is what our competitors do today, and it is time we made an attempt to revise our approach." Granted the need for avoiding marshalling yards as far as possible, the fact remains that some £80 million is to be spent on their modernisation. As the plan develops many old yards will be closed, a few new ones will be built and the layout of others improved. The author admits there are too many goods stations, many of which, designed for collection and delivery by horse-drawn vehicles, are definitely out of date. Concentration of railheads will mean extension of road collection and delivery services but improved rail transits to and from railheads and increased opportunity for mechanical handling. In emphasising the need for punctuality the article remarks upon the considerable number of men now tied up in relief crews and control staffs merely to guard against the incidence of delays in running and it stresses the need for minimising speed restrictions by modern methods of track maintenance.

Men and Equipment

PRIOR to the introduction of new methods, it states, all grades of the staff must be convinced of need for and applicability of these, co-operation being at the root of successful operation. In this connection local officers might be given more direct powers in relation to the staff they control, particularly in disciplinary and promotional matters. "The staff are likely," says Mr. Harvey, "to have greater respect for their district officer if they know that he has this power rather than if it rests with some staff officer in the background possessing power without responsibility." As regards organisation, he finds ample evidence to show that if maximum use of modern equipment is to be obtained it is not possible to have regard to regional boundaries for all purposes. Clearly, he says, some form of central planning must be arranged so as not to conflict with regional day-to-day management or to stultify regional initiative, and this is a matter of some difficulty. The article concludes with an assertion that "already in America and on the Continent railwaymen are looking towards Great Britain to see how we rehabilitate and rejuvenate our railways." They are convinced, it states, that by the end of the next decade British Railways will be the most modern and most efficient in the world. One hopes that the conviction will prove to be justified.

Forthcoming Events

June 14.—Permanent Way Institution (Leeds and Bradford). Visit to Hull Docks.

June 15.—Permanent Way Institution. Visit to new tunnel works, Greenwood-Potters Bar (E.R.).

Omnibus Society. Study tour of Doncaster area independents. Meet Wakefield Bus Station, 1.15 p.m.

June 20.—Permanent Way Institution. Visit to new tunnel works, Greenwood-Potters Bar (E.R.).

Institute of Navigation. Discussion, "The Significance of Blunders in Navigation." At Royal Geographical Society, 1 Kensington Gore, S.W.7. 5.15 p.m.

June 20.—Permanent Way Institution. Visit to new tunnel

June 22.—Omnibus Society. Visit to South Wales Area.

June 30-July 4.—Institution of Naval Architects. Meeting in Paris.

September 1-7.—Society of British Aircraft Constructors. Flying display and exhibition. At Farnborough. (Public days September 5, 6 and 7.)

September 26-October 4.—Commercial Motor Transport Exhibition. At Earls Court.

September 28-October 7.—International Railway Congress. At Madrid.

October 13-15.—Road Haulage Association. Annual conference. At Torquay.

November 5-16.—International Motor Show. At Turin.

MODERN TRANSPORT has an arrangement with Reuter's Trade Service whereby publication is made in this newspaper of all essential news from all parts of the world concerning traffic and transport by rail, road, sea and air and allied interests.

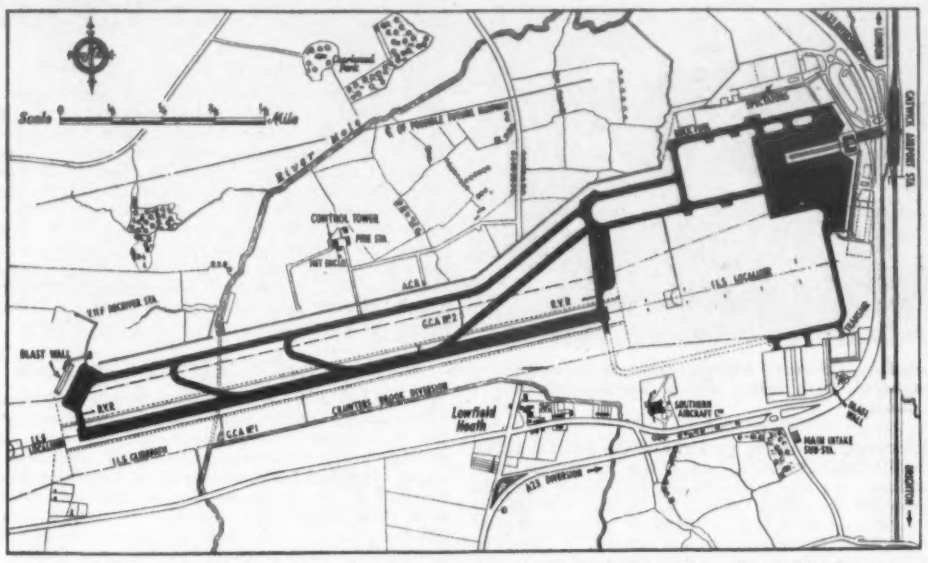
OPENING OF GATWICK AIRPORT

Incorporation of Many New Ideas

DIRECT RAILWAY LINK WITH LONDON

FORMAL opening by Her Majesty the Queen of the new Gatwick Airport last Monday, June 9, marked the virtual completion of the project for a relief aerodrome to London Airport which could at the same time serve as an alternative in the event of bad weather. The great attraction of Gatwick has always been the existence of a direct rail link with Central London and, to a lesser extent, comparable connections with large centres of population on the south coast. The possibilities of the site were the subject of special articles in MODERN TRANSPORT of January 22 and February 5, 1944, but official action did not come for a further 10 years.

After the opening the first flight was made by a British European Airways Pionair chartered by the Surrey County Council for a goodwill flight to Guernsey and Jersey. Thereafter the normal Channel Islands services of B.E.A. began to operate from Gatwick with the exception of two flights daily each way which will continue to use London Airport. These have been maintained by Elizabethan aircraft but are becoming a Viscount operation. There are ordinarily three trains an hour between Victoria and Gatwick Airport and one an hour to and from London Bridge. So far as Victoria is concerned there is a special flight indicator showing the flight numbers and aircraft departure times together with the platform numbers and times of appropriate trains. As a further aid to passengers the name Gatwick Airport and an aircraft silhouette appear in white on a red background both on the main train departure indicator and on the boards at the platform entrance. Two trains an hour take 40 min. for the journey and others about 10 min. more. An accompanying drawing shows the revised track layout at the station which allows the uncoupling or coupling up of strengthening sets to cope with heavy traffic.



General plan of Gatwick Airport showing present runway and centre line of possible future runway

Traffic

Apart from British European Airways which will have 162 departures and 163 arrivals each week and certain flights by its Salzburg service, Transair and Jersey Airlines are also using Gatwick. The former has moreover had a large modern hangar built. B.E.A. traffic staff totals 45 of whom 12 are women, and it has also 11 operational flight staff and 25 on the transport side. It may be added that the corporation has assisted the staff to find houses at Crawley in order to keep travelling to a minimum.

The terminal building is of concrete clad in glass and steel. It incorporates a railway station on the main Brighton line and is served by the new diversion of the London—Brighton road running directly underneath the building to which it is connected by approach ramps leading up to an elevated roundabout. This flyover is of particular interest because in conjunction with a pedestrian and cycle subway under the Brighton road it allows separation of traffic flows, a notable contribution to road safety and the convenience of travellers both to the new airport and between London and Brighton.

Terminal Building

The system of outward Customs inspection adopted is that passengers' heavy baggage is collected and customed on arrival while they themselves do not come under Customs control until called forward to join their aircraft. They can thus remain with their friends and use the restaurant, shops and other amenities in the building. Passengers are also able to walk under cover along the pier (or "finger") between the building and their aircraft. This finger is the first to be built in this country and runs across the main terminal apron to the west of the terminal building. The terminal includes a general shop, a newsagent, bank, post office, a restaurant, bar and a buffet together with lounges.

Operations Block

The operations block, a single-storey steel-framed building clad with prefabricated units, is under the eastern end of the pier, separate from but immediately adjacent to the terminal building proper. It houses the airport operational facilities including the first of the Ministry of Transport and Civil Aviation's semi-automatic electronic signals centres. The ground floor of the pier under the passenger walkways has been designed to incorporate crew Customs and the apron services which would otherwise have to be accommodated in separate buildings on the edge of the apron—an economy in the use of space. Over the pier and midway along it is a small marshaller's tower from which the terminal controller will supervise the movement of aircraft on the apron. The controller in the control tower has no responsibilities in that respect.

Terminal Area and Control Tower

The terminal area includes apron space for up to 21 aircraft stands, a freight shed, constabulary block, canteens, a boiler house, and vehicle parks. To the north of the area is the spectators' enclosure and car park. The control tower, with the airport fire station nearby, is sited to the north of the runway and midway along it in order to give the air traffic controllers the best possible position to control aircraft movements on the runway. If it is later decided to put in a second runway the tower will lie between the two.

There is a single east-west runway, 7,000 ft. long and 150 ft. wide running from a point about ¾ mile west of the railway line. The entire concrete surfaces are dark in colour; this innovation has been introduced in order to make the runway markings more easily conspicuous to pilots when landing than would be the case if the concrete had been left in its natural light colour and to avoid the expense of having to renew the markings frequently. The runway has paved shoulders, 75 ft. wide, which are rough surfaced and reddish in colour so as to define the runway edges clearly.

High-Speed Turn-offs

The taxiways and their connections with the runways have been designed to permit fast taxying which will assist in maintaining a high movement rate, although we would like to have seen a greater distance from the runway to the bend in the taxiways. The runway has edge-lights, wing bars and also a unique system of transverse bars of lights set in the concrete. The approach lighting is on the British Calvert line-and-bar principle. The comprehensive navigational aids include ILS (Instrument Landing System) and GCA (Ground Control Approach). The air traffic control patterns are designed to minimise noise in built-up areas at all times.

The Ministry of Transport and Civil Aviation is employing Frederick S. Snow and Partners to build the airport, in association with Mr. F. R. S. Yorke, F.R.I.B.A., of Yorke, Rosenberg and Mardall. Contractor for the main civil engineering works was Sir Alfred McAlpine and Son, Limited, while the terminal building was by Turriff Construction Corporation, Limited, and the control tower by Gilbert-Ash, Limited.

Roads and Drainage

The construction of the runway has meant a 2¾-mile long diversion of the London—Brighton road (A23) and a mile-long diversion of the Charlwood road. The Brighton road diversion is a dual carriageway for most of its length. The roadworks have been carried out by the Surrey County Council as agent authority for the Ministry, the contractor being Tarmac Civil Engineering, Limited. Construction of the airport has involved a diversion and culverting of the River Mole, Crawter's Brook and the Lowfield, Gatwick and Westfield streams. Five large storage ponds to control the net flow of water into the Mole, one of them adapted to store water for fire fighting, have also been built. These works have been carried out in consultation with the Thames Conservancy Board. Other incidental but important works consequent on the development of the airport included a major sewerage development carried out in association with the Dorking and Horley Rural District Council and the diversion of the main G.P.O. London—Brighton telegraph cables.

Station and Maintenance Area

There have been extensive engineering and signalling works on the Brighton line apart from the reconstruction of the former Gatwick Racecourse Station which has been renamed Gatwick Airport. It has been built by James Longley and Co., Limited, of Crawley, the same firm that built the original station in 1891 to serve the then new racecourse. The Ministry is making a contribution towards the cost.

In addition to the airport buildings for which the Ministry is directly responsible, operators are building bases in the maintenance area at the southern end of the airport and oil companies are developing fuel installations north of the terminal area, in both cases on ground leases from the Ministry of Transport and Civil Aviation. The maintenance area has been planned by the Ministry in consultation with the local authorities to provide the maximum noise protection for residents in the area. Tree planting will screen it to the south.

Radar Navigational Aids

A standard instrument landing system comprising dual localiser, glidepath, middle and outer markers and compass locator beacon has been installed on the basis of one complete installation for each landing direction. Normal remote control and monitoring facilities are provided. In addition precision approach radar has been installed and at present this consists of a mobile GCA equipment with displays in the airfield vehicle. This is scheduled to be replaced at a later date by a precision approach radar consisting of a mobile aerial head with remote displays in the approach control.

To ensure the maximum continuity of service, two completely separate surveillance radar systems have been provided. These are the Cossor ACR Mark VI and the Marconi S232 and in conjunction with the PAR provide a completed GCA system. The ACR Mark VI is a high power search radar operating on a wavelength of 10 cm. designed to provide short and medium range cover on the approaches to the airport. Moving target indication (MTI) is provided to eliminate permanent echo clutter from the radar displays. In addition, to reduce the returns from clouds and rain, circular polarisation is incorporated which discriminates in favour of the aircraft echo.

The Marconi S232 radar operates at a wavelength of 50 cm. and again has been designed to provide surveillance radar cover at short and medium ranges and provides an alternative service to the ACR VI equipment. Moving target indication is provided and at this longer wavelength little or no problem exists in respect of clutter from rain returns. The installation is similar to the ACR VI in that it consists of an aerial head mounted on a building housing the radar transmitters and receivers, terminal equipment including cancellation circuits located in the telecommunications equipment room in the control tower and outlets to the "table top" displays which are identical to those provided for the ACR Mark VI. The radar displays are mounted in a stand which enables two consoles to be located one above the other to provide air traffic control with ACR Mark VI and/or S232 displays as required and so maintain the maximum continuity of service. The engineering of the radio communication facilities at Gatwick follows the pattern of the installation at London Airport which was brought into service with the opening of the central area in 1955.

Recording Equipment

Gatwick Airport will see the first installation of multi-channel magnetic tape recording equipment which M.T.C.A. is introducing into service to replace the single-channel embossed film type of recorder at present in use. This equipment, which will initially record seven channels on a single tape, is capable of expansion, if necessary, by suitable additions of equipment to accommodate up to 15 channels.

The recording duration before tapes need to be changed is eight hours and a number of features to ensure continuity of satisfactory recording are included in the equipment. A system of automatic monitoring provides that in the event of a failure or serious deterioration of the amplifying chain associated with any channel, a change-over of that channel to a spare channel with its own amplifying chain is effected. The recording equipment is duplicated and any other failure will result in a change-over to the standby equipment.

The growth of civil aviation, with its consequent increase in message traffic and the need for speedier teleprinter message handling compelled the Telecommunications Directorate of the Ministry to conduct a critical examination of the United Kingdom Civil Aviation Teleprinter Network. Resulting from these investigations, it was decided that all existing and future signal centres should be equipped with semi-automatic teleprinter message exchanges specifically designed to reduce manual handling to a minimum. The first centre to be equipped with a fully electronic, magnetic drum storage, push button teleprinter exchange is at Gatwick Airport. The teleprinter exchange is known by the manufacturer, the Standard Telephones and Cables, Limited, as STRAD rather than by the lengthy description Signal Transmitting Receiving and Distribution System.

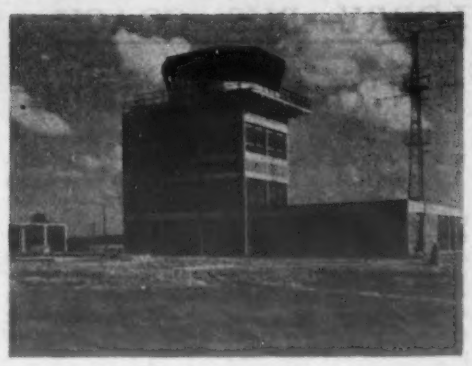
Latest Teleprinter Equipment

The STRAD handles traffic between local airport extensions at Gatwick and several trunk routes to the national signal centre at Croydon, London Airport, and the cross-Channel signal centre at Lympne. The equipment is expected to handle approximately 3,000 messages daily, 10 per cent of which will pass through the centre in the busy hour. All messages arriving and leaving the centre are switched electronically, the magnetic drum forming a temporary store whilst switching operations are in progress and for holding messages until engaged lines are freed. The only operator intervention required at the exchange is to scan the messages address and press the appropriate buttons to tell the electronic equipment to route the message to the addressee. Messages commence to flow out of the system within seconds of being received.

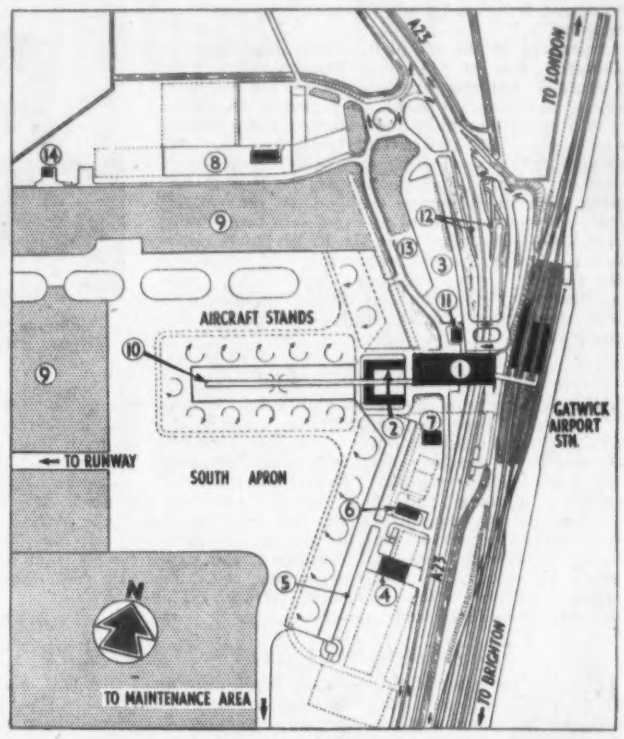
Airport Lighting

The aerodrome lighting and marking has been designed to provide maximum assistance to pilots in all weather conditions. Some special features have been installed for the first time as a result of trials held by the Ministry of Transport and Civil Aviation and the Ministry of Supply. Much of the equipment was provided by the General Electric Co., Limited. The familiar Calvert lighting, the line and cross-bar system, first installed at London Airport and since internationally accepted, extends for 3,000 ft. beyond the runway at each end.

(*Continued on page 14*)



Gatwick Airport control tower



Plan of the principal airport buildings: 1, terminal building; 2, operations block; 3, airport car park; 4, cargo handling; 5, floodlighting tower; 6, boiler house; 7, temporary canteen; 8, spectators; 9, future apron extension; 10, central finger; 11, constabulary; 12, bus stops; 13, staff car park and 14, motor transport

At the new Gatwick Airport: the central finger from the terminal building giving direct covered passenger access to the aircraft stands, the Brighton Road passing under the airport buildings showing ramped airport sliproads, the terminal building and covered passenger walk from the rebuilt station platforms and, extreme right, a longer-distance view showing the station track arrangement

LORRY—BUS—COACH

N.A.L.G.O. and P.M.T. Company

UNDER the heading "Partnership or Paternalism?" N.A.L.G.O., in the June issue of its journal, complains of the refusal of the 60-year-old Potteries Motor Traction Co., Limited, to grant recognition to N.A.L.G.O. supervisory and clerical staffs. With the T. and G.W.U. and the N.U.R., this union is seeking an early meeting with Sir Brian Robertson, chairman of the B.T.C., in an effort to set up national joint negotiating machinery for the staff of "private bus companies." The complaint regarding P.M.T. is that a N.A.L.G.O. branch was formed in 1950, by 1957 had recruited nearly 85 per cent of the staff concerned, but was thrice refused recognition. Intervention of a Ministry of Labour reconciliation officer produced no result. On that occasion the general manager warned that if the company had to apply negotiated agreements the staff might lose concessions it now enjoyed. N.A.L.G.O. is now endeavouring to whip up support for its claim in the area served by P.M.T. It has brought the complaint to the notice of M.P.s concerned, and also to local authorities and there is to be a publicity campaign. Five other B.E.T. companies who recognise N.A.L.G.O. are "expected to lend their support."

Speaking on the eve of its annual conference at Douglas, Isle of Man, on Monday, Mr. John Lancaster, national organising officer for transport staffs, said establishment of national machinery would mean that more than 20,000 of supervisory and clerical bus staff would have their pay and conditions of service regulated and fixed on a uniform basis. In a reference to the P.M.T. dispute, he said that more than 86 per cent of the staff—220 out of a total of 255—were members of N.A.L.G.O. He called upon Mr. R. W. Birch, chairman of P.M.T., to act responsibly and reconsider the matter. "It is scandalous," he declared, "that in the year 1958, one man should interfere with the democratic rights and freedom of his employees."

R.H.A. Rates Schedule

SPECIFIC points, distances and weight classes have all been considered for inclusion in the advisory rates schedule upon which the rates subcommittee of the long-distance hauliers group of the R.H.A. is now engaged. The scale would cover small lots of under 1 ton. One effect of the decision to identify specific places (if the schedule is eventually approved in that or, indeed, any form) would be different rates for journeys of the same length in different parts of the country, reflecting either costs or other economic factors. The schedule is unlikely to be published.

The People's Bus Fleet

BY the beginning of the week 14 buses were at work giving free rides (at your own risk) to strikebound Londoners; a further 12 were expected to join them on or about Thursday. In its efforts to get all 50 vehicles on the road (see last week), the People's League for the Defence of Freedom has encountered insurance difficulties, the companies initially demanding £30-40 per day for each bus insured. Professional paid drivers are employed, but the "conductors" are volunteers. As indicated last week, many of the buses are running in the suburbs, as far afield, it is said, as Potters Bar, Carshalton, Ealing and Woodford. Seven cover Central London points as far west as Hammersmith, some carry arranged parties of travellers. In nine days, it is claimed, the "people's" bus fleet carried nearly 70,000 passengers.

Road Transport Like the Telephone

THE time had long gone when the clock could be put back, either to nationalisation or to the days when the railways had it all their own way, said Mr. R. Morton Mitchell, chief executive officer of the R.H.A., in London on Monday this week. The whole national economy would be disrupted by any attempt to enforce direction of traffic from the roads to the railways. "Railways undoubtedly have their place in the scheme of things; it may be that there are types of traffic for which they are especially suitable. But we have moved on from the days when the railways had it all." Modern road haulage provided swift, door-to-door transport of goods in vehicles expressly made for those goods. It was part of the streamlining of a productivity-conscious economy—and any attempt to put back the clock would be as serious a blow to the running of modern life as would be an attempt to abolish the telephone.

Transport Convenor Stepped In

DURING a discussion by Dundee Town Council of the terms under which a dispute between the A.E.U. and the Corporation Transport Department had been settled, Mr. James Gillies, leader of the Progressive minority, quoted the transport manager as stating that the position was rapidly approaching when his right was being challenged, and that the position must now be settled. Mr. Gillies said he hoped to make out that the powers of administration in the department were now being challenged. It was the manager's job to control and manage the department. It was therefore not the job of the transport convenor (Mr. H. Dickson) to meet, as he had done, with certain groups of employees within the department and arrange terms and conditions of work. In the recent dispute the convenor, in the absence of the manager, and without consulting any other official of the department, had met the men and agreed among other things to the very position the manager had objected to. Mr. Dickson replied that he was one particular convenor who during his four years of convenorship had never interfered with the manager. As a manager himself (he is a coach operator), he appreciated that a manager should have the right to manage. As to the dispute, he said it became apparent to him that through the strike of engineers there would be practically no buses on the road. He for one was not prepared to see the public suffer. His action had been to protect the public.

R.H.A. Publicity Drive for Hauliers

DETAILS of the advertising and publicity campaign which the Road Haulage Association hopes to mount in defence of its members this autumn or winter have not yet been worked out, but an appeal for £100,000 funds from members was going out this week. The campaign would be directed to informing traders and the general public of the advantages of using free enterprise road haulage, but it is not, says Mr. R. Morton Mitchell, the chief executive officer, to be directed against the railways or B.R.S. "After all" (to quote him) "they are carrying for hire or reward." The campaign would be reframed if the threat of renationalisation acquired added importance through events at Westminster. It has been ascertained that contributions to this fund will be chargeable to business expenses.

Commer 10-11 ton articulated vehicle being loaded by Coventry Climax diesel fork truck; right, a Guy Vixen with Oldland bodywork employed, with many others, by the Bristol Co-operative Society

No P.S.V. Licence on Contractors' Bus

ON the ground that the vehicle was hired for a lump sum on the basis of the number of passengers carried, and because the passengers paid nothing to nobody, Passenger Transport Facilities, Limited, 50 Stockport Road, Manchester, denied at Dumfries Sheriff Court that on November 20 last year on the Dumfries—Carlisle road it had caused or permitted a vehicle to be used as a contract carriage without being licensed as a public service vehicle. Mr. G. T. Cruickshank, senior traffic examiner for the M.o.T. in Glasgow, stated that Passenger Transport Facilities had said that it did not intend to apply for a p.s.v. licence as it was considered unnecessary.

Cross-examined, he admitted that the public works contractors concerned (Merz and McLellan, Limited) provided their own transport for employees. They did not require a p.s.v. licence, as they were not carrying for hire or reward. Mr. Leslie Knowles, a consulting engineer with Merz and McLellan, said there was a contract to provide transport for workers. The workers were given free passes and payment was made by Merz and McLellan to Passenger Transport Facilities on the number of passengers carried. There was no deduction from a worker's wages for a bus fare. Mr. James Lund, office manager of the Mitchell Construction Co., Limited, the chief contractor at Chapelcross atomic site near Annan, described the workers' buses as "an added attraction" and not a right. His men had a free pass from Merz and McLellan. Judgment will be given on June 16.

Bus Station on Sheppey

A BUS station has been opened by Maidstone and District Motor Services, Limited, at Leysdown on the Isle of Sheppey. It is expected to handle over 50,000 express coach service passengers during the course of a summer season, quite apart from those on day tours and local services.

Provincial Bus Wage Claims

AFTER a meeting on Monday of the National Council for the Omnibus Industry on the claim by provincial bus company employees, it was stated that the employers had replied to the case presented by the trade unions in support of their claims—for increases in wages and alterations and improvements in conditions together with the introduction of a pension scheme. The claims were referred to a special committee in accordance with the provisions of the constitution of the Council. Discussion of a claim now before the N.J.I.C. in respect of municipal bus workers was last Friday adjourned until June 17.

B.T.C.—R.H.A. Liaison Committee

A PLATFORM for liaison on certain aspects of vehicle licensing has been established between the B.T.C. and independent hauliers with the setting up of a licensing liaison committee consisting of three B.T.C. representatives and three from the R.H.A. It would be able to discuss licensing principles and policy. The first meeting has not yet been fixed. The existing joint licensing subcommittee therefore now has a parent body to which to report on licensing matters, e.g. amending the "blue book" (rules for road-rail licence negotiating committees).

Bus and Coach Developments

Newport Corporation applies for a daily service between Dock Street and Ringland Estate (Hendre Farm Drive) via Chepstow Road and Ringwood Avenue. If granted the service to Chepstow Road (Royal Oak) would be modified.

L. F. Bowen, Limited, applies for the excursions and tours from Birmingham of Albert Winwood.

Maidstone and District Motor Services, Limited, has surrendered the licence for its East Grinstead—Larches—Ashurst Wood service (136).

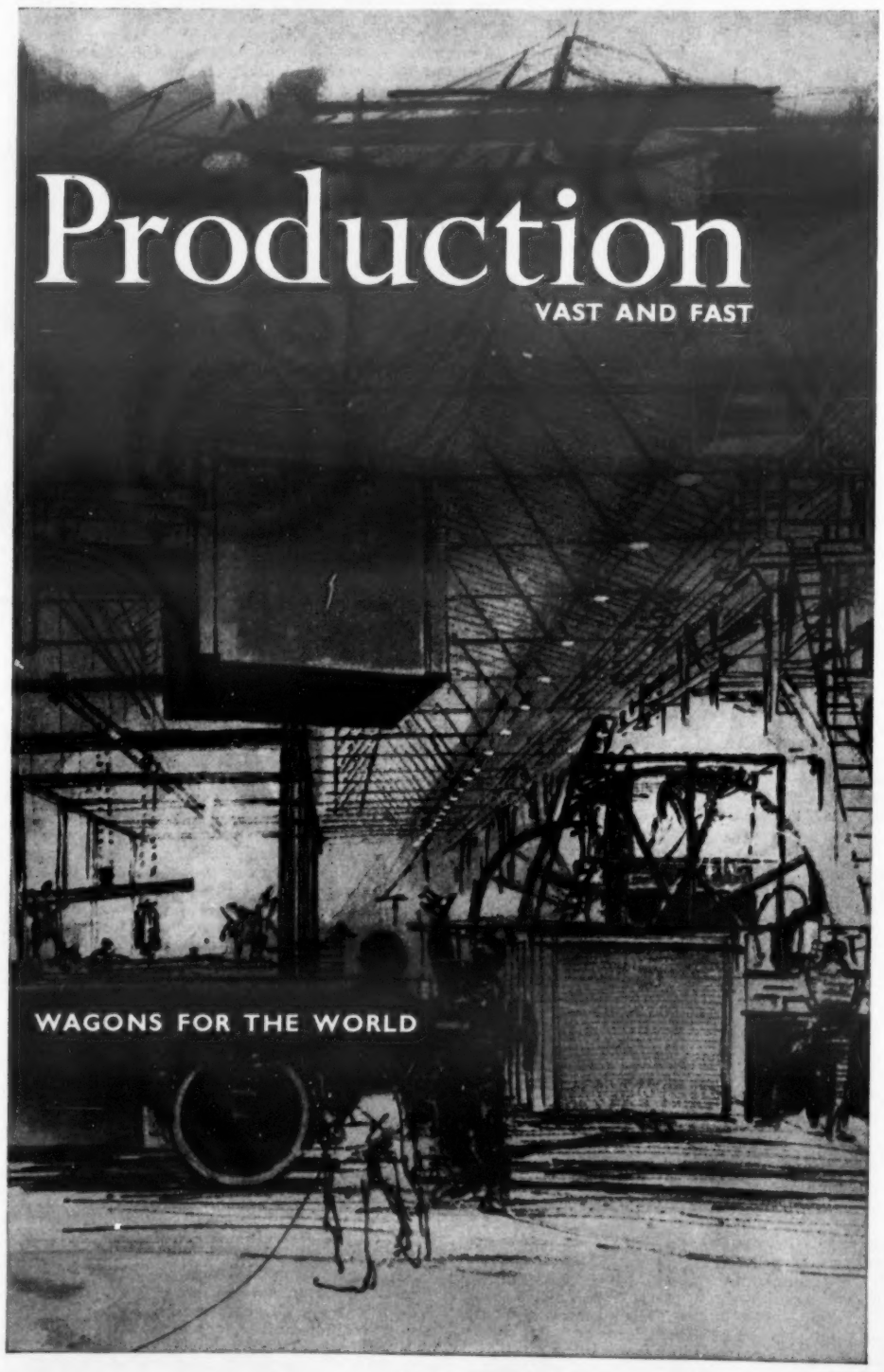
The *A.B.C. Coach and Bus Guide* has issued a summer supplement. This contains new services and amendments which have taken effect since the summer edition of the guide was published. The latter costs 5s. and is published by Index Publishers, Limited. The supplement is free.

Precision
FIRST AND LAST

Pressed Steel

In the last ten years, Pressed Steel have produced enough railway wagons to make a train 300 miles long. Wagons of all kinds and all gauges for home and overseas. But sheer capacity—the ability to meet big orders and meet them quickly—is only half the story. The other half is just as important, even though it cannot be expressed in statistics—the finish, the painstaking attention to detail, the skill and experience of the men you see here.

PRESSED STEEL COMPANY LIMITED
Railway Division: Paisley, Scotland. Head Office: Cowley, Oxford. London Office: 169 Regent Street, W.1.
Manufacturers also of Motor Car Bodies, Prestcold Refrigeration Equipment and Pressings of all kinds.



NEW MOTIVE POWER DEPOT AT THORNABY

Two Replaced at Cost of £1,250,000

N.E.R. ACHIEVEMENT UNDER MODERNISATION PLAN

STATED to be the biggest single project to be completed so far in the North Eastern Region under the railway modernisation plan, the new motive power depot at Thornaby-on-Tees was officially opened on June 5 by Mr. G. R. H. Nugent, Joint Parliamentary Secretary, Ministry of Transport and Civil Aviation, in the unavoidable absence of the Minister. Mr. Nugent was supported by Mr. T. H. Summerson, the chairman, and members of the North Eastern Area Board, Mr. H. A. Short, general manager, and other officers of the Eastern Region.

General view of the new Thornaby motive power depot, showing, from left to right, octagonal shed, straight shed, repair shop and wet ash pits

Costing approximately £1,250,000, this new depot is claimed to be one of the largest and most modern in the country. Capable of handling up to 220 large locomotives (more than 80 can be accommodated under cover), it replaces the two 75-year-old depots, now obsolete, at Newport and Middlesbrough and, in addition, will provide for the increasing volume of freight traffic arising from the expansion of the iron, steel and chemical industries on south Tees-side. For the present the depot will mainly serve steam locomotives, but it has been designed to facilitate easy conversion for use by the largest of the new diesel and electric locomotives as existing motive power is replaced.

Covering an area of some 70 acres alongside the main railway lines between Thornaby and Middlesbrough, the depot is the first part of a larger scheme, of which much is still in the planning stage, involving the replacement of the adjacent manually worked marshalling yards at Newport by one new mechanically operated yard.

The main lines between Thornaby and Middlesbrough have been diverted for a distance of nearly a mile to make room for the new depot, and for the modernised marshalling yard a further diversion of this line will possibly be necessary.

Complete colour-light signalling, with track circuiting and electric point detection, has been installed at Thornaby East controlling the entrance to the depot, and similar signalling has also been installed on the main lines between Thornaby East and Newport East.

Two Sheds and Repair Shop

The depot includes a large octagonal shed (22 stalls and a 70-ft. turntable) almost 200 yd. in diameter, a straight shed with six roads 265 ft. long, and a repair shop with five roads of similar length, together with a machine bay, wheel dropping and weighing facilities. All these buildings are constructed mainly of concrete. Other main essentials are a high-pressure water system for washing out locomotive boilers, a 350-ton mechanical coaling plant, a 70-ft. high 200,000-gal. water storage tank, overhead sanding gantries, water gantries, wet ash disposal pits, four covered inspection pits and five covered preparation pits. The layout is so designed that as soon as locomotives have been examined on entry, they can move freely through the sequence of operations to the exit with a minimum of delay.

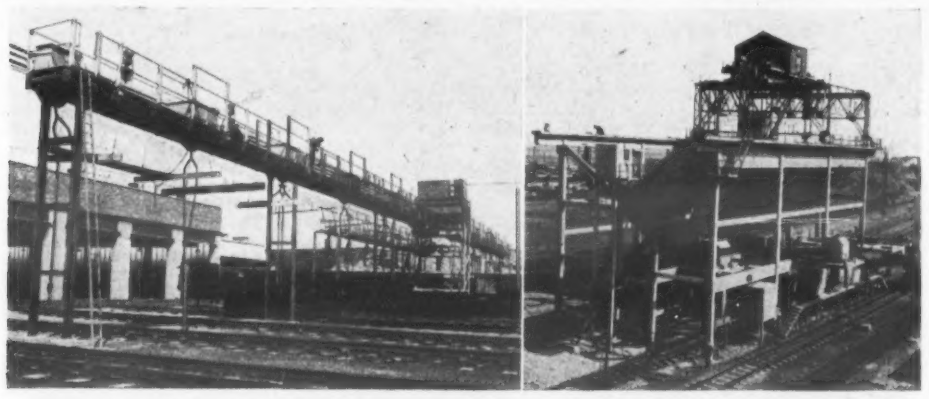
The depot is provided with good staff amenities comprising messrooms, clothes lockers with drying-rooms, washing facilities and showers. These arrangements are disposed mainly on the ground floor of the administration and amenities building, which also includes offices and a first aid room and is a composite construction of precast concrete framing and brickwork with precast exposed aggregate panels and aluminium curtain walling. There are coloured glass infill panels and the block is heated by low-pressure hot water in a combination of overhead radiant and embedded floor panels.

A portion of the building is of two-storey construction to accommodate the shed master, administrative staff and a classroom for staff training. The shed master's office has been designed to give him a wide view of the depot.

Adjacent to the administration and amenities building are cycle sheds with accommodation also for auto and motor cycles. Messrooms, locker-rooms and ablutions are also provided near the repair shops for the staff employed there.

Heating and Floodlighting

The whole of the heating and hot water for the depot is supplied from a central boiler-house containing two oil-fired boilers each with an output of 4,000,000 B.T.U.s an hour and capable of increased capacity if so required in the future. Electric lighting throughout has been designed to modern standards, electric fittings in many cases being built into the general design to give clean lines with pleasant appearance. All engine pits are fitted with fluorescent lighting with specially designed fittings built into the side walls of the pits.

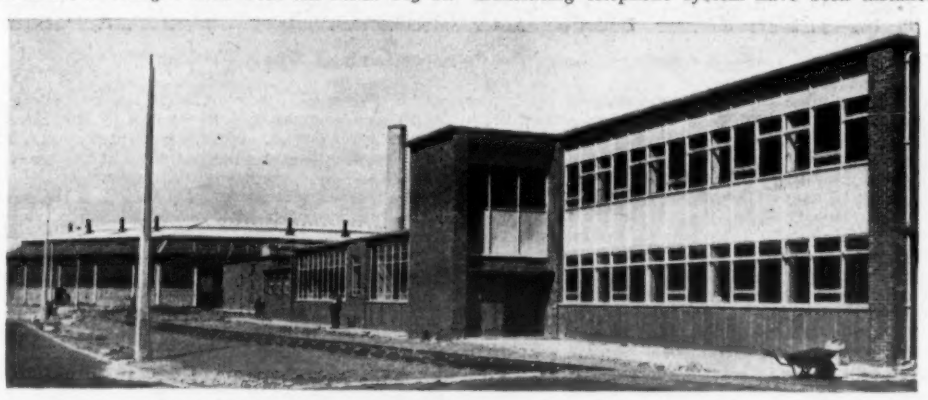


Two features of the Thornaby depot: sanding gantry and 350-ton mechanical coaling plant

The depot yard is floodlit by three light clusters mounted on Tubewright steel masts 50 ft. above ground level. The steel masts have permanent ladders with platforms at the top to facilitate maintenance and provide maximum safety for staff carrying out this work. The lighting clusters consist of three fittings spaced 120 deg. apart and each fitting takes one 400-watt colour-corrected mercury vapour lamp.

In the wet ash pit area the lighting is from 30-ft. Tubewright masts with 750-watt floodlight projector fittings, and the roadway entrance to the depot is illuminated by 250-watt colour-corrected mercury vapour lamps mounted on 25-ft. concrete columns.

A new telephone exchange and an inter-communicating telephone system have been installed throughout the various sheds and offices; an electrical pulsynetic clock system has also been provided.



Administration and amenities building at the new motive power depot

The main contractor for the new depot, covering construction of sheds, buildings, roads and water services was Charles R. Price of Doncaster. Others concerned included: Tarslag, Limited (precast concrete framing, etc.), S. Butler and Co., Limited (supply and erection of steelwork for engine sheds), Newton Chambers and Co., Limited (supply and erection of water tank and pipe work), Cowans Sheldon and Co., Limited (locomotive turntable and wheeldrop), Wharton Crane and Hoist Co., Limited (wheeldrop hoist), Alley and Maclellan, Limited (air compressor and installation), Smith Brothers and Webb, Limited (motorising machine tools), Crompton Parkinson, Limited (distribution cables), Bryce Electric Construction Co., Limited (transformers), A. Reyrolle and Co., Limited (switchgear), Paterson Hughes Engineering Co., Limited, and Herbert Morris, Limited (hoisting facilities).

BY APPOINTMENT TO HER MAJESTY THE QUEEN
Suppliers of Fire Extinguishers The Pyrene Company Limited

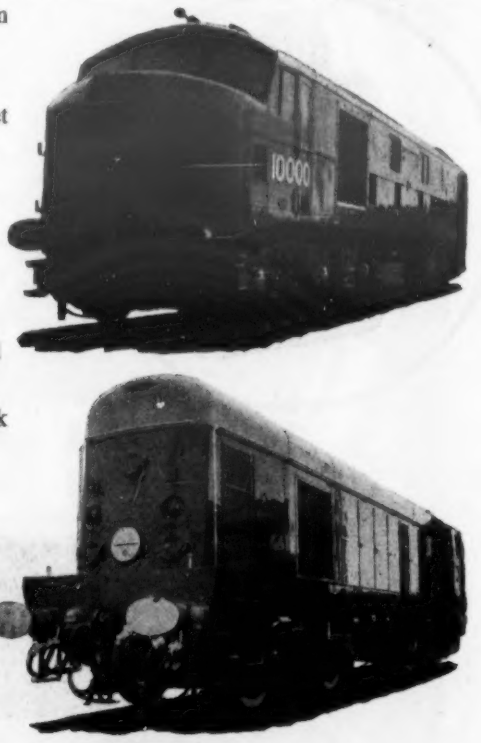
Pyrene TRADE MARK

CO_2 Fire Protection Installations for B.R. Diesel Locomotives

THE gigantic new plan for modernisation of the British Railway system is now well under way and in this bold programme modern, powerful Diesel Locomotives play a leading role. "Pyrene" built-in CO_2 fire extinguishing systems have been installed in a large number of new Diesel Locomotives now being constructed by several manufacturers throughout the country. Four different types are shown here and the Pyrene Company is proud of its contribution to this great venture which will make British Railways the most modern and the safest in the world.

For many years "Pyrene" Fire Appliances have been provided to meet general and specific fire risks throughout the vast organisation of the railway system of Great Britain. These include CO_2 installations for signal boxes where automatic operation is provided, foam fire-fighting equipment for oil storage risks, and "Pyrene" and "Conquest" hand fire extinguishers and hose reels for fire safety requirements on rolling stock and in depots, workshops, stations and hotels.

There's a "Pyrene" fire appliance for every fire risk throughout industry, commerce and transport, on land, at sea and in the air. Write to us now about your fire safety problems, however great or small.



THE Pyrene TRADE MARK COMPANY LIMITED

THE PYRENE COMPANY LIMITED

(Dept. M.T.5) 9 GROSVENOR GARDENS, LONDON, S.W.1 Tel.: VICtoria 3401

Head Office & Works: BRENTFORD, MIDDLESEX Canadian Plant: TORONTO

B.A.A
BATTERY ACID
is used by London Transport
and British Railways
•
F. W. Berk & Co. Ltd.
STRATFORD, LONDON, E.15
Telephone: MARyland 6644

A Subscription to
MODERN TRANSPORT
will keep you in touch with all British and Foreign transport developments

CLASSIFIED ADVERTISEMENT

RATES.—The minimum charge for classified advertisements is 7s. for 14 words or less, and 6d. for each additional word. The name and address of the advertiser is charged at the same rate. If a box number is used 2s. extra is charged to cover our name and address and postage. If set in paragraph form each paragraph is estimated separately. Official Notices and semi-display in the classified columns are charged at the rate of 45s. per single column inch.

CLASSIFIED ADVERTISEMENTS should be addressed to THE MANAGER, Classified Advertisements, MODERN TRANSPORT, Russell Court, 3-16 Woburn Place, London, W.C.1.

ACCEPTANCE.—Advertisements can be accepted up to 2.30 p.m. on Monday to ensure insertion in the current week's issue. MODERN TRANSPORT is on Sale every Friday.

SITUATION VACANT

CHIEF RAILWAY RATES AND CHARGES ASSISTANT

in Central Transport Department in London of prominent Iron and Steel Group, with works in all parts of U.K.

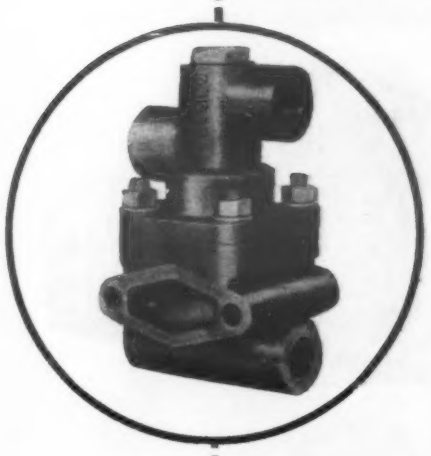
Applicants must be fully experienced in all aspects of railway rates work, with both historical and current knowledge of rating procedure and practice.

The work will involve the checking and negotiation of railway rates, loadings, rebates, etc., contact with railway and works officials at appropriate levels, and general responsibility for the details of the railway side of the Central Transport Department insofar as rates and charges are concerned.

A favourable pension scheme is in operation. Salary commensurate with experience. Write with full particulars of present position and past experience to:

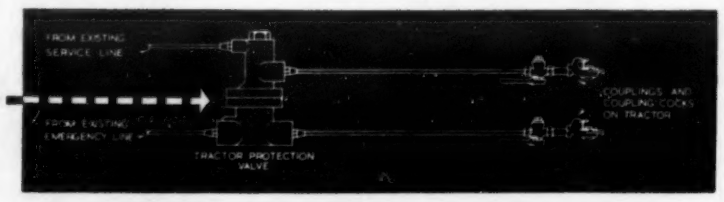
Box 3791
Modern Transport Publishing Co., Limited
3-16 Woburn Place, London, W.C.1

AGAINST A BREAK-AWAY!



Additional brake protection is provided by a Westinghouse Tractor Protection Valve in the event of trailer break-away or unusual reduction of pressure in the air brake system.

In case of such reduction in pressure the valve automatically closes off the service and emergency lines at the rear of the tractor.


FROM EXISTING SERVICE LINE
FROM EXISTING EMERGENCY LINE
TRACTOR PROTECTION VALVE
COUPLINGS AND COUPLING COCKS ON TRACTOR

Fit a
WESTINGHOUSE
TRACTOR PROTECTION VALVE
EASILY FITTED TO YOUR EXISTING TWO PIPE SYSTEM

Write for descriptive leaflet to:
WESTINGHOUSE BRAKE and SIGNAL CO. LTD.
Automotive and Industrial Products Division, Hanham Road, Kingswood, Bristol. *Tel.: Bristol 67-1781*
Sales Agents for Road Transport Undertakings:—Equipment & Engineering Co. Ltd., 2-3 Norfolk Street, London. w.C.2

MODERN AIRWAYS and COMMERCIAL AVIATION SECTION

FLIGHT DEVELOPMENT OF THE ROTODYNE

Further Fairey Progress

THE Fairey Rotodyne is now well advanced on its flight development programme. Because it is the first and only aeroplane of its type anywhere in the world, most of the work entails research into fields never before explored outside a wind tunnel. It first flew on November 6, 1957, as recorded in MODERN TRANSPORT at the time, and since then has made more than 80 flights. In the earliest stages each flight was of short duration—about 20 minutes—with the aircraft flying purely as a helicopter. Each sortie was concerned with a specific test which required careful analysis before the next step was taken on the road leading to transitional flight, speeds of over 150 m.p.h. being reached during this phase. On April 10, 1958, successful transition from helicopter to autogyro flight was achieved in straight, level and steady flight without any loss of height, and the Rotodyne flew forward on its two main engines alone, with the rotor power off. This achievement placed the Rotodyne far ahead of any other helicopter or vertical take-off aircraft in the world.

It is generally accepted that in the flight development of any aeroplane the number of flights made in a given period is a more valuable criterion than time spent in straight and level flight, and in this the Rotodyne compares favourably with the Lockheed Electra, the new U.S. turboprop air liner.

Handling

From the outset, the cyclic and collective pitch controls were found to be extremely crisp and precise. Fairey power controls are used with duplicate sources of hydraulic power. The temporary fixed undercarriage makes it necessary to land the aircraft with vertical velocities not exceeding 3 ft. per sec. The fact that this has presented no difficulty illustrates the excellence of these major flying controls. Behaviour of the rudders and elevators at forward speed has been satisfactory, the elevators in particular giving a powerful control of fuselage attitude. The wind tunnel tests had indicated that only small longitudinal trim changes should occur as the aircraft gains forward speed from the hover or moves out of the ground cushion and flight experience proved this to be true.

In general the passenger cabin vibrations are of small amplitude, the level decreasing at the higher speeds as the rotor power and collective pitch decreases. A considerable development effort has been devoted to the suppression of the noise from the tip-jet units. This noise is, of course, only a problem during take-off and landing, since in normal cruising flight, these units are shut off and the aircraft is very quiet indeed. The investigations have been successful and various experimental silencers have been tested with very promising results. The final design of the noise suppression nozzle is now being developed on rigs at White Waltham and the Fairey Aviation Co., Limited, has every expectation that when the silencers have been fully developed the aircraft will gain complete public acceptance from the noise aspect.

Performance and Structural Tests

Comprehensive performance tests have not yet been carried out though present indications are that hovering performance and vertical climb are considerably better than had been predicted. The figures so far reached with the prototype are:

Vertical rate of climb ..	1,300 ft. per min. at partial power
Level speed	155 m.p.h. at partial power
Forward climb	2,400 ft. per min. at partial power
Maximum altitude ..	7,000 ft.
Maximum flying weight	33,500 lb. (Design a.u.w. of prototype with existing Napier Eland engines=33,000 lb.)

The range of instruments installed in the prototype is extremely comprehensive. Three auto-observer panels are fitted, the essential instruments being monitored by human observers. In addition several hundred strain gauges are fitted, both to the rotor and to the airframe, rotor gauge indications being transferred to the fuselage recorders via slip rings. Following initial flights at low speed the cruising speed was increased step by step to the present value of 155 m.p.h. At each stage comprehensive strain gauge measurements were made to assess the magnitude of fluctuating stresses, blade flapping angles, clearance from droop stops, airframe vibration levels and so on. The measured fluctuating stresses are compared with results achieved in laboratory fatigue tests, to ensure that safety standards are maintained.

Tunnel and Ground Testing

The extensive programme of tunnel testing made possible an accurate assessment of the stability of the aircraft and control effectiveness, as well as permitting a comprehensive prediction of the trim and manoeuvre configuration of the aircraft with variation of forward speed and rotational speed. This is used to give the pilot a realistic guide as he extends the flight envelope in the course of development. These tests confirmed that the changes in trim due to rotor airframe interference were small and well within available control, and that the loss of lift due to rotor downwash on the airframe at low forward speeds was also quite small.

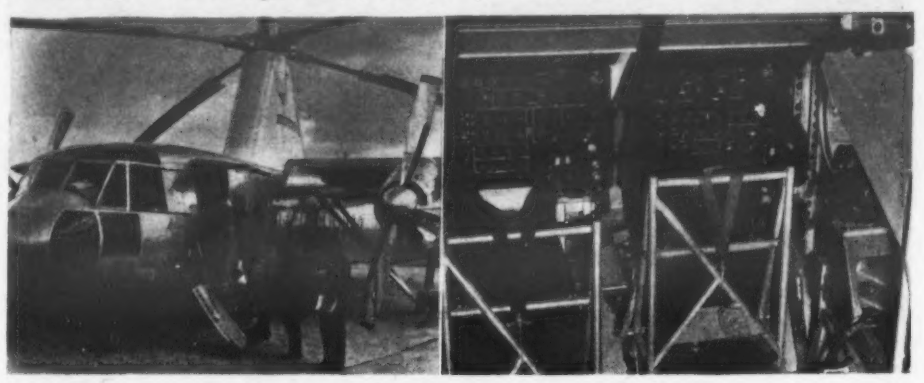
A 1/15th scale dynamic model was built to be used in conjunction with the theoretical work on the ground resonance problem. The model reproduced the stiffnesses and inertias of the blades, airframe and undercarriage—though not of course the aerodynamic characteristics of the blades. Extensive tests were made to check the behaviour of the model and also to correlate theory with experimental results. At a later stage the actual prototype was subjected to tests designed to measure the distribution of stiffness and damping available. To carry out these full-scale tests, the rotor head and blades were removed and replaced by an equivalent mass. A rotating out of balance force was then fed in at the head, and airframe response at all critical points measured over a range of frequencies from 0.5 to 3 cycles per sec. In order to simulate the effect of lift the complete airframe was slung to a jib and varying lift forces up to the aircraft weight applied while the tests were in progress. The very low frequencies involved made it necessary to apply the lift force through air jacks.

The test information was fed back into the model tests and a complete ground resonance picture obtained. It became evident that among the various modes of vibration, a rather unusual combination of circumstances existed in which the aircraft might encounter ground resonance. While a new retractable undercarriage was being designed to avoid this trouble, the original design was fixed temporarily in the down position using rigid bracing struts so as not to delay initial flight testing. The value of these intensive pre-flight tests became evident when the final full-scale ground resonance and complete power plant clearance tests were accomplished successfully in five days.

Tip Jet System

The units for the tip jet system were developed on static rigs at White Waltham airfield, as has already been described in MODERN TRANSPORT. After static trials, tests were made on a rotating single blade rig which reproduces centrifugal effects on air flow and fuel flow. The main problems concerned stability over a wide operating range, light up and maintenance of high combustion efficiency. The development is of an empirical nature requiring an extensive test effort. Certain features are essential to the basic safety of the aircraft. These

(*Continued on page* 11)



The flight crew goes aboard and, right, flight test instruments installed in the Rotodyne

With cameramen busy, the Rotodyne lands at White Waltham

THE INSTITUTE IN DUBLIN

A Most Successful Congress

LARGEST GATHERING SINCE THE WAR

SINCE the Lord Mayor of Dublin was at the time flying from New York to Dublin by Aerlinte Eireann, as was only proper, the Institute of Transport congress in Dublin was formally welcomed by Senator J. J. O'Keeffe, the deputy lord mayor, when the first business session opened in the Gresham Hotel on the morning of June 4. The previous night there had been an informal reception by the president, Sir Reginald Wilson, and Lady Wilson, when the unforced gaiety of spirit set the tone for all the social events that followed. The senator in his welcome reminded the delegates of the standing of Dublin in the Republic of Ireland and added that it was the main gateway to a country that had much to offer the visitor. That this was so was due in no small measure to transport, the largest industry in the country and, indeed, in the world.

Replying, the president said that there must surely be some significance in the fact, although it behoved him to pursue the matter no further, that the congress with getting on for 400 delegates and friends participating was the largest to be arranged by the Institute since the war and he was sure that all would benefit from the formal proceedings and from the visits and social occasions. He then invited Mr. T. C. Courtney, chairman of Coras Iompair Eireann and primus chairman of the Irish section of the Institute, formally to present his paper, "The Changeover to Diesel Traction on Irish Railways." An abstract of this paper appeared in MODERN TRANSPORT of June 7.

In his remarks the author emphasised the need there had been for urgent action and the importance of the conversion scheme to the economy of the undertaking. This had caused the decision not to have a pilot scheme with prototypes and had led to the careful embodiment of penalty clauses in the contracts when they were placed. The problem of finding railways other than in the United States with substantial diesel experience had been considerable, since most European railways had only just embarked upon partial substitution. The Algerian Railways had been particularly helpful.

Comparison with Australia

In the discussion on the paper Mr. A. G. Hall referred to the similarity of the problems of Coras Iompair Eireann to those of the Western Australian Government Railways. There also the plunge had been taken straight away although deliveries had not been so prompt and there was indigenous coal. Ireland, of course, had plenty of water but this had been an especially important factor so far as the W.A.G.R. was concerned.

One trouble experienced had been in the training of drivers as it had been found that the older men were slow to learn the new techniques. In that connection he must congratulate C.I.E. on achieving agreement for single manning. So far as maintenance costs were concerned it had to be appreciated that these ought to be inconsiderable in the earlier days when few things should need replacement, but it might be that experience would show that the figure worsened later.

Mr. L. G. Burleigh found the paper especially interesting since it indicated, with the retention of almost all the facilities, the opposite trend to what was happening in Britain, where moreover the modernisation programme involved heavy reconstruction works. Mr. James Amos questioned whether in certain areas, and he was led to the point by the degree of resemblance between Scotland and Ireland, the public could not be equally well served with cheaper types of vehicle. Was it not a fact that there was often too much transport and that in the wrong place? He felt that really the criterion must be whether transport paid. Mr. F. Lemass said that the total cost of the scheme to C.I.E. had been between £5 and £6 million and that, with savings running at £1¼ million a year, it would be seen that this expenditure would soon be recouped.

The tragedy was, of course, that the changes in other circumstances had resulted in the continuance of overall losses so that the best that could be said was that these were less than they would otherwise have been. He was supported by Mr. D. Stewart, who said that there had been a 50 per cent improvement in running losses. It had to be remembered that distances were short in Ireland in comparison even with Britain and this rendered the system particularly vulnerable to competition.

Increased Train Loads

Another contributor to the discussion called attention to the fact that the new locomotives had made it possible to increase the authorised adhesive weight from 63 to 85 tons and that this had been the source of considerable savings by allowing increased train loads. Mr. E. W. Arkle said that it had commonly been found that you were lucky when replacing steam locomotives by diesel if you could do so in a proportion of three to two and he asked whether the changeover had been accompanied by a wholesale revision of the working timetable and re-diagraming of locomotive duties. Mr. J. F. Parke suggested that more might have been spent on the conversion scheme than was really necessary, since there was a number of lines which gave no sign of ever being anything like self-supporting and on which the facilities maintained by the diesels were the same as those provided in the days of steam traction. Answering a query from an earlier speaker, Mr. Lemass said that the policy was to depreciate on a renewal cost basis.

Replying to the discussion, Mr. Courtney said that a fundamental problem was how to maintain the railways if it was decided they should be kept. There had since 1945-46—a time when the railways were still prospering because of the aftermath of war and the shortage of vehicles—been substantial increases in the numbers of cars and lorries on the road but the passengers carried and goods moved had not increased in total. It was difficult to make the users appreciate that they would only need to pay the bare cost if they would use what they had. Instead they preferred to import additional equipment and to abstract traffic from the state services.

All or None

The agreement on one-man operation of locomotives had not been easy to achieve but as a result of careful planning there were vacant posts all over the system to which it was possible to transfer the displaced men. Answering the points made by Messrs. Amos and Parke, the speaker accepted the fact that transport was not always where it was most wanted and that there was sometimes too much of it. He had tried not to exaggerate the circumstances in his paper, but in his view the only way to consider the matter was whether the railways should be retained as a whole or replaced as a whole. Estimates prepared by C.I.E. had shown that the cost of maintaining all facilities by road vehicles would be of the annual order of £10 million whereas the cost if the railways were retained would be of the order of £8 to £9 million. Furthermore the additional road vehicles needed would cost considerably more than the diesel locomotives and railcars. So far as the revision of working timetables and diagrams went, something had been done but not as much as C.I.E. could have wished.

First Luncheon and Visits

After the morning session the delegates and their ladies were entertained at luncheon by Irish Shell, Limited. Mr. T. A. Crawford Young, managing director of the company and vice-chairman of the Irish section of the Institute, presided. Thereafter there was a number of visits. One of these was to Collinstown, the Dublin airport, where they inspected the Aer Lingus maintenance facilities, the Lourdes terminal, and the control and meteorological offices and another to Donnybrook, the newest bus garage of C.I.E. in the Dublin area, and Store Street bus station. A third party went to the railway works at Inchicore and saw among other things an exhibition of new and old rolling stock. This, incidentally, was open to the public for the remainder of the week. There were also two visits to factories for ladies in the party. On the evening of June 4 there was a formal reception given to delegates by Mr. Sean Lemass, an Tanaiste (Deputy Prime Minister) and Minister for Industry and Commerce, and Mrs. Lemass. This was held in Iveagh House.

Members of the party of delegates to the Institute of Transport congress in Dublin who visited the Inchicore works of Coras Iompair Eireann

Organisation of Transport

When the business session was resumed on the Thursday morning the president apologised for the absence of Sir Brian Robertson who had been prevented by the circumstances in London from attending; he had very much wanted to come. Sir Reginald Wilson formally introduced the paper "The Organisation of Transport" (MODERN TRANSPORT, June 7), on behalf of its author although he doubted whether he would necessarily emphasise the same points.

The discussion was opened by Mr. E. R. L. Fitzpayne who referred to the voluntary attainment of agreement at Glasgow in connection with proposals for electrification of the local railway services of the Scottish Region. He was anxious lest withdrawal of road services in furtherance of that agreement might not be followed by some small operator stepping in on the plea that he was meeting a demand. He felt that the establishment of a transport board might prove to be the solution.

Sir H. Osborne Mance held that integration was the complete fusion of two or more forms of transport while co-ordination was the division of function between different forms of transport. Was transport to be provided at the least cost to the community as a first essential or was it primarily to pay its way? If the Government decided upon the former then it might well pay to have what was nowadays called cross-subsidisation. He felt it impossible to avoid reference to track costs and he could see no objection to C-licence operations providing that the holder paid his way by making appropriate contributions to the cost of public transport. It was urgent that there should be a permanent body to advise the Government.

Inquiry into Costs

Mr. E. G. Whitaker doubted whether the 1947 Transport Act had ever been intended to solve the whole problem since both the C-licensee and the car owner had been left out. He was not attracted by Sir Osborne Mance's view that the right premise was to decide transport on cost. How was it going to be decided? It would seem that there would have to be a proper inquiry into the costs of transport. He was in favour of co-ordination provided that it gave something better than already existed. Mr. James Amos felt that if any transport board was set up in Scotland, it should rather be for the country as a whole. To his mind subsidies gave rise to political complications.

(To be continued)

PRODUCTIVITY IN TRANSPORT

Hauling a passenger express at 100 m.p.h. or 1,250 tons of freight at 55 m.p.h. are two of the varied duties required of the 3,300 h.p. high-voltage A.C. locomotives which the G.E.C. is supplying to British Railways. The modern main-line locomotive must be able to take on most jobs which come to hand. Its output in terms of work per day is scrutinised as carefully as the production of a factory. The combination of G.E.C. electrical skill with the long railway traditions of the North British Locomotive Co. Ltd. has produced a design equal to the demand for the acceleration of passenger and freight trains which is an objective of railways all over the world.

G.E.C.

THE GENERAL ELECTRIC COMPANY LTD · MAGNET HOUSE · KINGSWAY · LONDON · W.C.2.
TR241

BP DERV

AT THE PUMP

AT THE PUMP that carries this sign your drivers will be able to fill-up with the finest quality Derv in Britain. And if they always carry a Shell and BP Derv Agency Card with them, they can get Derv on credit or for cash on Agency terms at over 1,900 sites in Great Britain.

PETROL AGENCY DERV

This is the sign they should look for

THE BP SHIELD IS THE SYMBOL OF THE BRITISH PETROLEUM COMPANY LIMITED

Cut your costs with the economical

COMMER-UNIPOWER

10 TON SIX-WHEELER

with Trailing Axle

★ Rootes two-stroke diesel engine, developing 105 b.h.p.

★ Bodyspace of 21 ft. 6 in.

★ Maximum gross vehicle weight, 15 tons.

The 'Commer-Unipower' 10 tonner is based on the thoroughly proved Commer 7 ton chassis with its amazingly economical Rootes diesel engine, whilst in addition the wide use of Commer components in the chassis conversion facilitates servicing through the country-wide Commer Dealer Organisation.

BUILT STRONGER TO LAST LONGER!

COMMER CARS LTD. LUTON EXPORT DIVISION: ROOTES LTD. DEVONSHIRE HOUSE PICCADILLY LONDON W.1

NEWS FROM ALL QUARTERS

Australian Rolling Stock Exports

The Australian Commonwealth Engineering Co., Limited, is making an effort to increase exports by designing and constructing railway rolling stock to suit overseas operating conditions, states the managing director, Mr. G. H. Watson. The company is building diesel railcars for Malaya and India, passenger cars for Cambodia and refrigerated wagons for New Zealand.

Hull Traders Want Free Overside Delivery

Hull Chamber of Commerce and Shipping has decided to inform Sir Robert Letch, chairman of British Transport Docks, that there were no grounds for his recent suggestion, made before the Transport Tribunal, that an alteration in the system of free overside delivery at Hull would be acceptable. It was stated that members of the Chamber were united in their conviction that the continued application of the practice is vital to the well-being of the port.

Teign Valley Line Closes

Train service on the Western Region Teign Valley branch in Devon was withdrawn on and from June 9. This 17-mile stretch of line which ran from Exeter to Heathfield has been served by five trains in each direction on weekdays, with an additional service on Saturdays. The passenger train service between Llantrisant and Penygraig also came off on the same day. Coed Ely and Penygraig stations were entirely closed but Tonyrefail will remain open to deal with parcels.

Councils and Quicker Licence Issues

County taxation officials are to suggest to the Minister of Transport the adoption on a national scale of the proposals made by a Middlesex County organisation and methods team designed to speed up issue of vehicle excise and driving licences. They provide for a reduction in the number of the different rates of vehicle licence duty, alterations in registration books and application forms and the establishment of a national central registry for vehicle files. Another suggestion is that returns required by the Ministry should be simplified. The Parliamentary and general purposes committee of the County Councils Association has called for a report on the subject.

Modernisation of Greek Railways

Talks are under way between the Greek Ministries of Communications and Commerce for the modernisation of the Hellenic State Railways in order to erase the annual deficit in railway operations. They are aimed at finding ways of obtaining new rail equipment from abroad in exchange for Greek agricultural and other products to avoid a drain on Greece's foreign currency reserves. The question of modernising railway equipment is, however, linked with the overall study of reorganising land communications, and consultations with other Government departments will be necessary before final decisions were taken. Eight railway engines were recently overhauled in German factories and have already been delivered to Greece; twelve more are undergoing repairs.

Aberdeen Horse Tram Must Move

Aberdeen Corporation has told the Tramway Museum Society that it has no longer space to store its horse tram. The Society is now seeking a new home; the tram is offered free to any museum, but offers should be addressed to the Aberdeen general manager.

Singapore Harbour Extension

Singapore Harbour Board reports that preliminary work has been completed on the first phase of its 40 million Malayan dollar East Lagoon scheme, which calls for the construction of nine new berths. Three will be built in the first phase. Two of them will be 550 ft. and one 725 ft. The present East Wharf is to be broken, and the foreshore moved out for berths to be used at all tides.

Keadby Bridge Repairs

Traffic using Keadby Bridge, over the Trent near Scunthorpe, will be subject to delay for the next few weeks as the wooden floor beams of the lifting span are being replaced by concrete. Vehicles exceeding 8 ft. in width and 12 ft. 6 in. in height have to use Gainsborough Bridge, 15 miles to the south. Bus services are being maintained by single-deckers. Later improvements will include increased headroom and the provision of a footpath on the outside of the structure. High-masted river traffic has not been able to pass under Keadby Bridge for about two years. Repairs have also been going on to the parallel railway bridge.

Sidings for Steel Company of Wales

When the £2 million marshalling yard now in course of construction by the Western Region of British Railways near the Steel Company of Wales Abbey Works, Margam, is completed it will be fully mechanised, with radio communications and an automatic telephone exchange with 100 lines capacity. The scheme comprises an up-and-down hump yard with 12 reception sidings with engine release road and engine return road; 48 sorting sidings, 10 storage sidings, and space for a diesel motive power depot. Fifteen of the sidings have been allocated exclusively for S.C.W. inward traffics to provide for proper segregation of different types of coal and other traffics for all three works, Abbey, Port Talbot and Margam.

Manchester Area Diesel Trains

Mayors and chairmen of local urban district councils and other civic dignitaries and traders made an inaugural trip on June 4 in one of the new diesel railcars which go into service next Monday on the London Midland Region between Manchester, Oldham, Royton and Rochdale. There are to be many more trains on these lines and travel will be quicker. Services will be at 20-min. intervals between Manchester Victoria and Oldham, and 40-min. intervals between Oldham—Rochdale and Oldham—Royton. There will be 31 diesel trains on weekdays from Manchester to Rochdale instead of 18 steam trains as now, 25 from Rochdale to Manchester instead of 17, while the Manchester—Royton services will be stepped up to some 25 trains in each direction instead of the present 15.

Don't let your efficiency slip–B.R.S. will have the answer

Circumstances may be against you. But British Road Services are on your side — always. A telephone call to your local B.R.S. depot quickly brings you a helping hand from a nationwide organisation with a willing and experienced staff and a vast fleet of vehicles of all kinds, regularly maintained, and ready to tackle any job, at any time. Modern methods and equipment ensure careful attention to every load, and the B.R.S. teleprinter network provides the means for rapid transmission of your special instructions.

B.R.S. (Pickfords) maximum capacity 8-wheeler for liquids in bulk. Within their diverse fleet B.R.S. have a full range of tank vehicles suitable for a wide variety of liquids in quantities from 600 to 4,000 gallons—just one of the many and varied services British Road Services render to Trade and Industry.

If you find transport something of a problem . . .

Ring *British Road Services*

— the best link between dispatch and delivery

COMMERCIAL AVIATION

Long-range Britannia to Africa

U.K.—MOROCCAN TALKS

ON Sunday, July 27, B.O.A.C. will introduce its long-range Britannia turboprop air liners on the routes between Britain and Central and South Africa. These aircraft will provide faster schedules and greater payload capacity than the medium-range Britannias now operating through East and Central Africa to Johannesburg. The first service will leave London at 3 p.m. on July 27; flying through Rome, Khartoum, Nairobi and Salisbury to Johannesburg, the total scheduled journey time is 23 hr. 15 min. When the stop at Salisbury is omitted on one service the journey time will be reduced by 65 min. The present Britannia service takes 23 hr. 50 min. and carries 20 first-class and 48 tourist passengers. The long-range Britannia will carry 20 first-class and 54 tourist passengers. Northbound from Johannesburg, calling at Salisbury, the long-range Britannia's flying time is 23 hr. 40 min. compared with 24 hr. 45 min. at present. Omission of the Salisbury stop reduces the schedule by approximately one hour. The long-range Britannia will operate B.O.A.C.'s present four weekly services to Johannesburg, leaving London on Sunday, Monday, Tuesday and Friday and Johannesburg on Sunday, Tuesday, Wednesday and Thursday. From July 31, the long-range Britannia will also operate services to Central Africa, in association with Central African Airways, replacing Argonauts on this service, and reducing the present journey times to and from Salisbury, Rhodesia, by about 10½ hr.

Additional Sydney—Hong Kong Service

Qantas Empire Airways now operates a second weekly service between Australia and Hong Kong through Manila, providing Manila with three services weekly. The present Hong Kong service departs Sydney on Mondays, returning Wednesdays. The new service will depart Sydney on Friday and return Sunday.

Atlantic Commodity Rates Cut Proposal

North Atlantic air carriers are considering a proposal to reduce existing specific commodity rates for clothing and textiles generally by 20 cents per kilogram between the United States or Canada and Europe, it was announced on June 5 by the New York office of the International Air Transport Association. Subject to government approval and the concurrence of all carriers, the proposal would become effective on September 1 next.

New B.O.A.C. Associated Company

British Overseas Airways Corporation has signed a five-year agreement with Kuwait Airways under which B.O.A.C. will be responsible for the management and operation of the Kuwait Airways services. It is planned to operate services between Kuwait and other Middle Eastern countries with Viscount aircraft and later a service to London will be inaugurated. The shorter services between Kuwait and Basra and Abadan will be operated by Dakota.

B.K.S. Inaugural to Bergen

B.K.S. Air Transport, Limited, inaugurated its twice-weekly flights between Newcastle-upon-Tyne and Bergen last Wednesday. The trip to and from the newly-built Fleeland airport outside Bergen took just over two hours each way by a 55-seat Elizabethan aircraft. The route is an extension of the B.K.S. Belfast—Newcastle service and links up with Norwegian Luftbussen flights to Alesund and Trondheim, Oslo and Stockholm, and Stravanger, Kristiansand and Tonsberg.

Pan American Jet Service this Year

Pan American Airways anticipates inaugurating transatlantic jet passenger service late this year, its president, Mr. Juan T. Trippe, has announced. The airline's new maintenance base for its Atlantic Clippers at Idlewild, New York, will be ready for use next month; Pan American's new passenger terminal, also at Idlewild, is scheduled for completion by March, 1959. The first three Boeing 707 Clippers of P.A.A.'s new jet fleet are now undergoing C.A.A. certification flight tests. They have already accumulated over 300 hours of flight time, in addition to the 1,000 hours flown by the prototype 707.

Silver City Record Bookings

For the guidance of British motorists and motorcyclists visiting the Continent this summer, Silver City Airways has prepared a table showing the reduced number of touring documents now required by the 14 European countries most often visited; latest petrol prices are also shown. No fewer than 11 of the 14 countries no longer require a carnet, and only five call for an international driving licence. During the first week of June, the company received its 40,000th booking for the cross-Channel car ferry. This compares with 21,741 cars booked by the same date last year and indicates that Silver City target of 50,000 cars carried in 1958 is likely to be well exceeded.

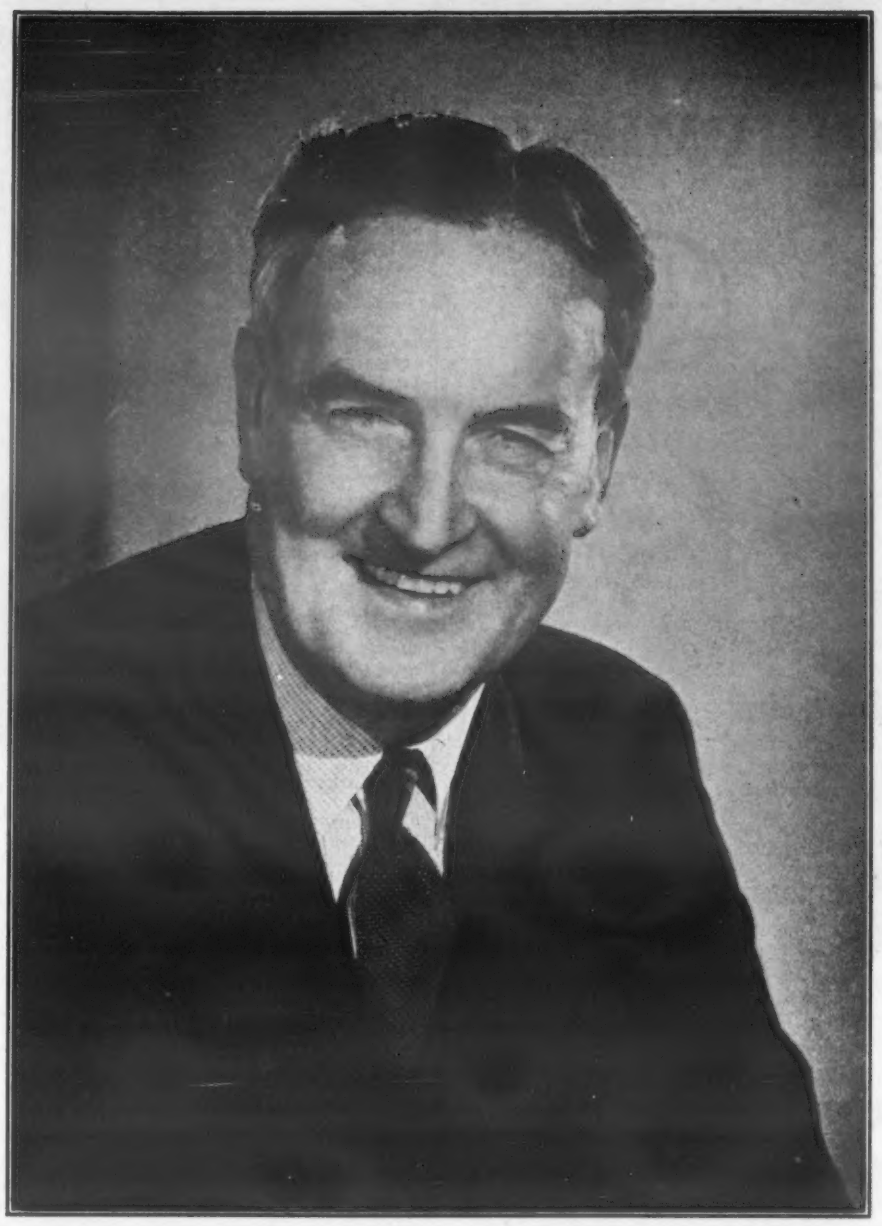
Talks Between U.K. and Morocco

Air services negotiations took place from May 26 to June 7 at the Ministry of Foreign Affairs in Rabat between delegations of the United Kingdom and the Kingdom of Morocco. The negotiations provided an opportunity for a wide exchange of views and enabled the two delegations to draw up provisions of the agreement which is to be concluded immediately upon the establishment of the principles which are to regulate the operation of air services by the airlines of the two countries. In accordance with an agreement between the two companies which has been approved by the aeronautical authorities of the two countries, the Gibraltar—Tangier services will, with effect from June 15, 1958, be operated by both Gibraltar Airways and Royal Air Maroc.

Rise in Luxury Class Travellers

Mr. Warren Lee Pierson, chairman of the board of directors of Trans World Airlines and acting president, recently announced in Paris that the company carried 67.5 per cent more de luxe and first-class passengers to Britain, the Continent and Middle East during April than in the same period last year. He went on to say that T.W.A. had been forewarned of this year's transatlantic tourist avalanche by the advance bookings which began to pile up in the latter part of 1957 at offices throughout the United States. From these advance reservations it became clear that Britain held the lead in popularity with a greater increase of bookings than any other transatlantic destination. While tourist class and particularly economy class traffic volume had been high so far this season, the 67.5 per cent uplift in luxury class air travellers was the most dramatic trend discovered.

INSTITUTE OF PETROLEUM



Mr. C. M. VIGNOLES, C.B.E.

• • • • • •

As already recorded in MODERN TRANSPORT, Mr. Charles Malcolm Vignoles, who has been managing director of Shell-Mex and B.P., Limited, since 1951, was in April elected president of the Institute of Petroleum for 1958-59. Born on May 2, 1901, he was educated at Sedbergh School, where he was head of the school and played for the 1st XV, and Magdalene College, Cambridge, where he won a Mathematics Exhibition and took an Honours degree in Mechanical Sciences. His career in the petroleum industry began in 1924 when he joined the Shell group of oil companies and the first eight years of his service were spent with the Asiatic Petroleum Company in Malaya and Siam. His initial appointment was on the technical side of the bitumen sales department, but he was soon transferred to the executive side and served in the shipping department in Singapore and afterwards as branch manager in Malacca. He returned to London in 1932 and worked in the fuel oil department of the Shell Petroleum Co., Limited. In 1940, when the war had begun to transform the whole existing pattern of world oil supply, he became the representative of the Shell Petroleum Company on the overseas supply committee of the Petroleum Board, and later joint executive secretary of the committee, working under the chairmanship of Lord Godber, the present chairman of the "Shell" Transport and Trading Co., Limited. Mr. Vignoles' work on this committee was recognised by the award of the O.B.E. in 1946. After the war he was appointed eastern area manager supervising from London marketing matters for the Shell Group in Far Eastern areas and Australasia. During this period he was honoured by the Government of Siam, receiving the Order of the Crown of Thailand. At the end of 1950 he was made a director of Shell-Mex and B.P., Limited, becoming managing director of the company in March, 1951, as already indicated. In November, 1956, Mr. Vignoles was chairman of the Oil Industry Emergency Committee formed to assist the Ministry of Power in dealing with the problems arising from the closing of the Suez Canal. He was awarded the C.B.E. in the 1957 Birthday Honours. He is a member of council of the Institute of Directors, a trustee of the Civic Trust and a member of the Council of Industrial Design. He is a past master of the Worshipful Company of Turners and also a Governor of Sedbergh School.

BUSES IN SCOTLAND

Mr. Amos on Road Services

TOWN PLANNING CONFERENCE

SPEAKING at the annual conference of the Town Planning Institute (Scottish branch) in Edinburgh on May 30, Mr. James Amos, chairman of the Scottish Omnibuses Group, B.T.C., stressed the common interest of the town planner and the transport operator. "The needs of public transport," he said, "must be given consideration at the inception of planning and must not be left, as has happened so often in the past and still sometimes happens today, as something to be thought about and worked in after development has been completed." Public transport was more efficient than private transport in terms of cost, but not generally in terms of individual convenience. It was also much less demanding in terms of road space, which in our cities was restricted and could only be expanded at exorbitant cost.

The first and most obvious restraint needed was the restriction of street parking. The public highways must be kept free for the movement for which they were intended. Measures such as well-conceived one-way street systems, no-waiting restrictions, unilateral waiting and other devices had a part to play in keeping the traffic moving. But these devices must be used with common sense. One-way traffic was only effective if it resulted in the full utilisation of road space by traffic flow. There were too many instances of the road space released by one-way traffic arrangements being swallowed up by all-day parking.

Need for Staggering

Many attempts had been made to effect staggering, either between factories within industrial areas or within factories themselves, but with comparatively little success. Hours of work must of course take full cognisance of factory organisation and the avoidance of loss of production and, while this might make it difficult to stagger sections of a particular factory, it was sometimes difficult to appreciate the arguments put against staggering working hours between factories on industrial estates. Effective staggering would, in addition to facilitating important operational economies, provide more comfortable travel, reduce congestion and save journey time.

Bus Stations and Routes

Bus stations could be justified only in very few cases where there was a very large changeover of passengers, and particularly where traffic across the centre was unbalanced. It might, however, be desirable in certain cases to provide amenities for passengers short of a bus station, e.g. waiting rooms, shelters and the like. Where bus stations were justified they should be sited at central traffic points and the journey from the city perimeter should be carefully routed.

"I would like," said Mr. Amos, "to impress upon town planners the importance of letting the buses get through to where the public want to go; also that they must not overlook the importance to the shopkeeper and trading interests of encouraging free and convenient access to the principal shopping centres."

Rural Services

Dealing with the operation of rural services, Mr. Amos said that the obligation to operate these unprofitable services and thus maintain the standard of rural life had been accepted by most operators of stage carriage services. In a recent debate on rural services in Parliament the Government speaker agreed that in the main the big operating companies were carrying their share and even more than their share of unprofitable routes. In the Scottish Bus Group the receipts from no less than 22 per cent of the total mileage operated in 1957 were less than the average costs of the operating company, and losses on individual routes ranged from a penny to 16d. per mile. In the full year the total loss to the Scottish Omnibuses Group through the operation of these unremunerative services amounted to £550,000.

But the profitable routes were becoming less profitable, and the unprofitable routes even more unprofitable, making it increasingly difficult to maintain the services to the rural communities. Moreover, the position had now been reached where increases in fares failed, due to consumer resistance, to provide a corresponding increase in receipts and, if continued, threatened to price the bus industry out of business.

Recent amendments to regulations to facilitate the use of small 12-seater buses on rural services were unlikely appreciably to affect the overall problem. Quite apart from the difficulty of encouraging capital expenditure on vehicles of this type on many routes, they would be impracticable owing to the incidence of occasional and infrequent peak traffics when vehicles of this seating capacity would be totally unsuitable to meet traffic requirements.

Continuance of unremunerative services on their present scale would thus be impossible unless means were found to reduce the costs of providing them. The suggestion that they might be run on a part-time basis by an operator concerned also with some other occupation was to be commended on certain of the lightest routes. In the main, however, most rural services were provided only because the larger operators carried them as a charge against their profitable routes.

Co-ordination

Dealing with the possibilities for co-ordination of bus undertakings, Mr. Amos said that the avoidance of waste was one of the objectives of the Traffic Commissioners in the licensing of services, and a great deal had been achieved. But the task was immensely simplified where there was a common financial interest through common ownership of all the services. In Scotland this policy had already been carried a long way through common ownership of services by the Scottish Omnibuses Group.

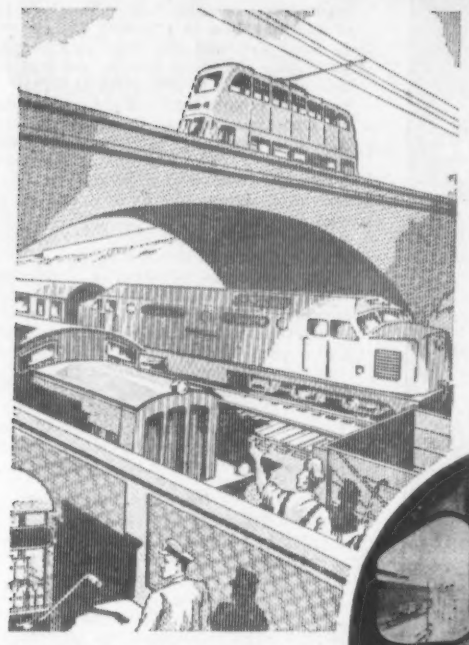
A number of independent operators and also the four municipalities, however, still provided services. In certain instances this might involve overlapping and a waste of mileage and therefore money. Hence there might be "a case for consideration—and I put it no higher than that—whether consequential economies in operating costs and added convenience to the travelling public would not justify the merger of the whole of the passenger transport operations of Scotland into a single undertaking." Unification, he pointed out, need not imply centralisation of management. Day-to-day management could, and should, remain regional, as in the Scottish Omnibuses Group today, through local management responsive to local needs. But the underlying structure of the services as a whole could be planned in the most efficient and economical manner.

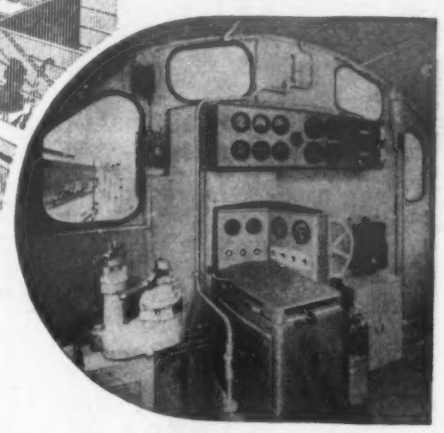
ELECTRICAL EQUIPMENT

by

B T-H

SERVES THE INDUSTRIES OF THE WORLD





Driver's cab of a BTH 1000 h.p. diesel-electric locomotive

IN transport undertakings at home and overseas, the initials BTH are recognized as a symbol of the finest in electrical equipment — a guarantee of proved performance.

Electric and diesel-electric locomotives
Electric equipment for multiple-unit trains
Electric equipment for trolleybuses
Speed indicators and mileage recorders
Sub-station equipment
Track-sectionalizing equipment

BRITISH THOMSON-HOUSTON

THE BRITISH THOMSON-HOUSTON COMPANY LIMITED
RUGBY — ENGLAND

an A.E.I. Company

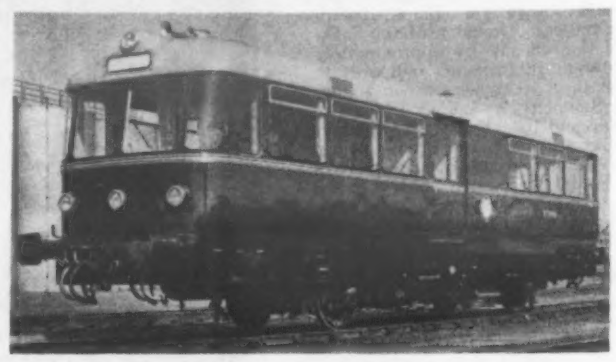
A5062

GERMAN RAILBUSES

Eastern Region Gets Five W.M.D. Units

FIVE lightweight diesel railbuses built for British Railways by Waggon und Maschinenbau, G.m.b.H., Donauworth, Germany, have now been delivered to the Eastern Region and are being used initially on the Witham—Maldon, Witham—Braintree and Audley End—Saffron Walden services. They are part of an order for a total of 22 such vehicles placed by British Railways with a number of manufacturers last year so that extensive practical trials could be undertaken. The other orders went to Bristol Commercial Vehicles, Limited (two), Park Royal Vehicles, Limited (five), D. Wickham and Co., Limited (five) and A.C. Cars, Limited (five). The first of these, built by A.C. Cars, was delivered in February this year and was described in MODERN TRANSPORT for February 22.

The W.M.D. cars are four-wheelers, with bodies designed in accordance with British Railways requirements and the underframes and mechanical equipment generally similar to that employed on vehicles in service with the German Federal Railways. Although particular attention has been paid to achieving a light weight, wherever possible standard production components have been used to facilitate servicing and replacements. The total length over buffers is 45 ft. 9½ in., body length is 41 ft. 10 in. and width over body panels is 8 ft. 8⅜ in., giving an interior width of 8 ft. 4 in. An overall height from rail of 11 ft. 9⅛ in. gives an interior height of 7 ft. 8 1/16 in. The wheel diameter is 3 ft. 3½ in. and the wheelbase is 19 ft. 8 7/32 in. The tare weight of the car ready for service is 15 tons; it is designed to carry 56 seated and 40 standing passengers at a maximum speed of 55 m.p.h.



One of the five German W.M.D. diesel railbuses delivered to Eastern Region recently

Body

The body contour has been designed to conform with British Railways C1 loading gauge. To meet the requirements for body mounting and for absorbing buffer shocks (the cars will normally only be coupled for towing in the event of breakdown on the track), a through-length body underframe is provided. This is fabricated by welding of longitudinal girders, themselves made up of welded flanged plates, and channel-section crossmembers. To increase rigidity, a corrugated plate floor is connected to the frame by plug-and-stitch welding. Exterior body sides and roof are panelled in aluminium while the ends are of light-gauge steel plate, all secured by riveting to Z-section steel body frames. Greater rigidity of the roof panels has been imparted by longitudinal swaging. Valances welded to the frame sidemembers form in effect a 1 ft. 11 in. deep extension to the body sides.

The floor, sides and roof are lined with sound and thermal insulating material before the plywood interior panelling is fitted. Internal finish is ivory paint to the ceiling and clear synthetic varnish to the sides. Safety glass is rubber-glazed directly to the outer panelling and the side windows have hinged sections at the top for ventilation. Curtains are provided at the side windows and there is a sun visor in each of the two enclosed driving positions at each end of the car. Blinds are fitted to the glazing in the driving compartments to protect the driver from glare from interior lights at night.

The body is separated into two identical saloons, with doors on both sides of a central vestibule, which also provides a small luggage compartment on each side. The doors are power operated normally under the control of the driver but push buttons are also provided over each door. In emergency, the doors can be opened and closed by hand. Seating is arranged three and two on each side of a gangway, all facing the driving end of each saloon except for one triple centre-facing seat alongside each driving compartment. The seats have interior coil springs covered with rubberised hair and squabs filled with the same material, covered with leathercloth. Both saloons have lengthwise luggage racks of hemp mesh on light-alloy frames.

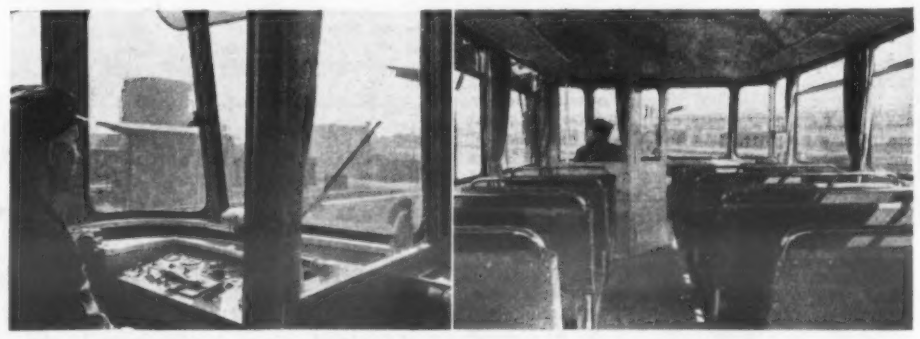
Mechanical Units

The main underframe is a rectangular steel structure of two longitudinal rolled sections and two rolled-section headstocks welded together, with additional longitudinal and transverse members to support the mechanical units and give the necessary rigidity. Axleboxes fitted with S.K.F. roller bearings are carried in Ferrozell adjustable guides having longitudinal and transverse clearances of about 1/16 in., said to provide smoother curve negotiation than rigidly mounted axles. (Ferrozell is a synthetic wear-resisting material requiring no lubrication that has been used successfully on German Federal Railways for a number of years.) The longitudinal clearance is kept constant by wedge adjusters, said to require attention only at long intervals. The lightweight wheelsets are carried on laminated steel springs through adjustable spring screws on the underframe. Each axle is equipped with two brake discs and Knorr-B.S.I. disc brakes operated by compressed air. The wheel diameter of 3 ft. 3⅛ in. permits nearly 1 in. of tyre wear.

The power unit is a Büssing horizontal six-cylinder diesel engine producing 150 b.h.p. at 1,900 r.p.m. and is mounted under the floor. Transmission to one axle is through a fluid flywheel, designed to lock up when either input or output shaft speed exceeds about 800 r.p.m., and cardan shaft-coupled Z.F. six-speed gearbox with electro-mechanical gearchange. Gears are selected electrically by means of the driver's control lever, the appropriate gears being engaged by electro-magnetic multiple-disc clutches. A conventional propeller shaft carries the drive to a Gmeinder final drive unit, which also embodies forward and reverse gears selected pneumatically by a valve at the control desk. In the event of loss of air pressure, direction gears can be changed by hand, access to the axle being provided through a trap in the floor. Driving torque is transmitted to the frame through a flexibly mounted torque arm.

The rack position of the Bosch fuel-injection pump is controlled by a foot-operated valve by the driver and an idling-speed governor at the pump. An auxiliary hand throttle lever is provided for use in the event of failure of the pneumatic foot throttle motor. An electropneumatic engine stop button is provided on the desk, as is also an electro-pneumatic deadman's handle. Each control desk also includes the six-position gear-selection switch and direction switch already referred to, controls for engine starting, air-operated sanding gear, the air brakes and electrically operated three-tone horns and the normal engine and transmission gauges and warning lights. Each driver's compartment is equipped with an upholstered folding seat, an electrically operated windscreen wiper, a Schulz defroster, a small fire extinguisher and the sun visor and rear window blinds already mentioned.

The engine air intake is equipped with a Delbag exchangeable filter element and fitted in an accessible position in one of the luggage compartments. The exhaust pipe also rises through the floor and roof and the section passing through the compartment is insulated against heat and noise. The same compartment houses a header tank for the engine cooling system, which incorporates four radiators for interior heating and the two windscreen defrosters, a fire extinguisher and a tool and first-aid cupboard. A letter rack and emergency ladder are accommodated in the other luggage compartment.



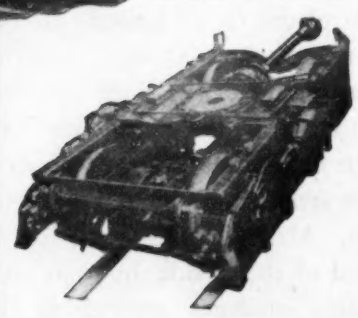
A view into the enclosed driving position and, right, one of the two identical saloons which together seat 56 passengers and provide room for 40 standing

Cardan Shafts
and Universal Joints by—

HARDY SPICER

B-B type diesel-hydraulic locomotive for Indian Government Railways (Courtesy of North British Locomotive Co. Ltd.).

for
North British
Diesel Locomotives



Bogie of a North British diesel-hydraulic locomotive, showing cardan shaft with Hardy Spicer universal joints, coupled to final drive reduction gearing over the drive axle.

30 years since Hardy Spicer launched into the field of power transmission . . And now . . this famous old firm is in a stronger position than ever before to supply standardised reliable components at competitive prices, or to co-operate with locomotive designers to produce special requirements.

products of Birfield Group experience and resources

HARDY SPICER LTD · WITTON BIRMINGHAM
The Railway Division
Birfield Industries Limited
Stratford House · London W1
Telephone: GROsvenor 7090

MEMBER OF THE BIRFIELD GROUP

Hardy Spicer Ltd. is a founder member of the Birfield Group comprising 16 companies famous in light engineering, and including Laycock Engineering Ltd., Phosphor Bronze Co. Ltd., The Vacuum Brake Co. Ltd., and others.

CHESTER WAGON REPAIR SHOP

First For Vacuum-Braked Stock

WORK has started at Chester on the first new wagon shop to be provided with special facilities for the maintenance of the vacuum brakes with which freight wagons are now being fitted under the railway modernisation plan. The new shop is to be sited in the coal yard near Chester General Station which will avoid the use of the level crossing necessary in the old shop. Adequate shop and siding facilities will be provided for dealing with all the work of wagon repair, including the turning of wheels, the necessity for which is expected as a result of the more intensive use to which wagons will be put.

There will be full facilities for the periodic examination and overhaul of the continuous vacuum brake mechanism on 75 wagons weekly, and also for the scraping and painting of all-steel and steel-frame wagons which has to be done five-yearly to maintain them in good order.

Capacity for Work Increased

Whereas the old shop could not deal with all the crippled wagons arising locally, and some had to be sent away, the new shop will be able to handle all local work and will have capacity to assist other shops in certain types of work. All types of wagon repairs will be possible except heavy repairs, which will have to be done in one of the main works.

The new shop is expected to carry out weekly: 92 light repairs and steel wagon repairs and 25 brake overhauls. In addition the reconditioning of 250 brake cylinders and associated equipment will be undertaken partly for the wagons in the shops and partly for other wagon shops at Holyhead, Crewe and Garston. The staff at the new shop will be about 60 as compared with the 19 employed in the existing shop. Among the new plant and equipment will be a combined wheel and journal lathe, various portable tools, automatic vacuum brake overhaul and testing equipment, an overhead crane and gantry, a 25-ton wagon traverser, an air compressor, exhauster, capstans, hoists and air and vacuum mains.

OFF-STREET UNLOADING

Birmingham Shows the Way

A VALUABLE contribution to freer traffic flow in New Street and High Street, Birmingham, has been made by the incorporation of underground loading bays for the large store buildings erected at the junction of these streets. This is what has hitherto been popularly referred to as the Big Top site because when the site was cleared at the end of the war it was used for a time by a circus. On it has been erected by Raventop Investments, Limited, a 12-storey block, housing branches of British Home Stores, Horne Bros., Henry's Stores and other firms likely to have considerable traffic in and out.

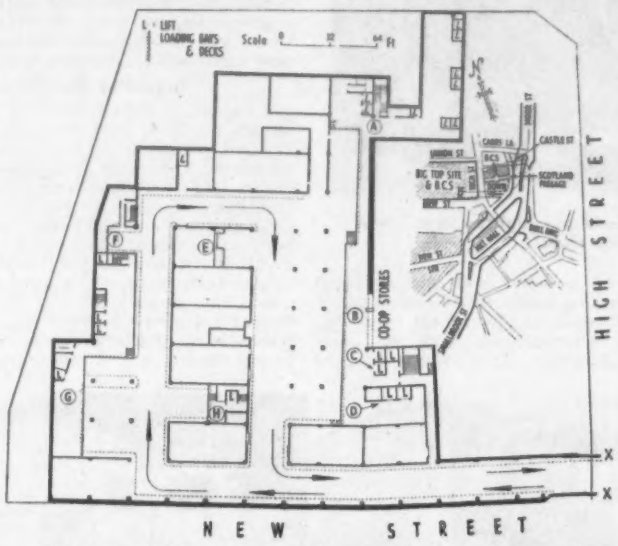
Contiguous with the Big Top building on the High Street side are premises belonging to the Birmingham Co-operative Society, which also owns an extensive frontage on the east side of High Street immediately opposite the new building.

It was clear that the erection of the new multi-storey buildings would be likely to increase traffic congestion if the loading and unloading of goods had to be done in the street.

The city surveyor (Sir Herbert Manzoni) and his staff in conjunction with Messrs. Cotton, Ballard and Blow (architects for Raventop Investments) and the Birmingham Co-operative Society, decided to take advantage of the construction of the inner ring road to obviate this. Running south-east by south from the junction of High Street and New Street is a gradient leading to the Bull Ring. As will be seen from the accompanying diagram, the inner ring road will cross this hill, and the layout will be such that north-south traffic will have to pass round a long rectangular island enclosing the Market Hall. At the north-east corner of the intersection which the ring road will thus make, a service road 18 ft. wide will take off, more or less along the ancient right of way called Thomson Passage. It will run north to Carr's Lane.

Scotland Passage is a steep narrow lane running out of High Street and passing through the middle of the existing Co-operative premises. It is bayed out at one point and so already provides off-the-street reception and dispatch facilities. When Scotland Passage is closed, following the completion of the ring road and service road, the Co-operative Society will use instead three new loading bays facing on to the service road. The B.C.S. buildings on this side of High Street are being extended northwards to Castle Street for warehousing purposes. The Co-operative will also construct a pedestrian tunnel linking the two sites on either side of High Street.

Between the Bull Ring and Scotland Passage is the mouth of a new tunnel which drops under High Street on a gradient of 1 in 16 and reaches a depth of 40 ft. below street level under the Big Top site. The roadway in this new tunnel is 22 ft. wide and there is a narrow footpath each side, although pedestrians are not expected normally to use either it or the new service road on the Thomson Passage site. Headroom is 15 ft. Under the centre of the Big Top building this roadway surrounds a rectangular block. Loading bays with decks are provided within this central block, also on the outer sides of the roadway; these with their trucking ways connect with lifts which give access to the various occupiers' premises, including the Co-operative premises on the west side of High Street. Provision is made for 20 lifts in all. The G.P.O., it will be noted from the diagram, has its own loading bay.



The inset (right) to this diagram of the underground unloading bays on a Birmingham site indicates its relation to the new ring road and improvements on the adjoining Birmingham Co-operative Society site. Tenants of the unloading bays indicated on the diagram are:

A Henry's Stores and shops in Union Street
B Birmingham Co-operative Society
C British Home Stores
D Shops on High Street — New Street frontages
E Inland Revenue
F G.P.O.
G Shops on Union Passage—New Street frontages
H Horne Brothers

Scenes at two of the underground loading bays at the Birmingham site described in our article. Left, vehicles delivering opposite lifts on the British Home Stores loading deck; right, the Henry's Stores bay has shutters which close it off when deliveries have ceased. Headroom is ample but support pillars appear to limit vehicle movements in some degree

Scotland Passage is a steep narrow lane running

Rotodyne Development

(*Continued from page 6*)

comprise head and blades, hydraulic controls, the complete power installation, air ducting system and tip jet units, together with associated operating controls. So great is the importance of these assemblies that a special rig was built at Boscombe Down incorporating all of them to full scale.

This rig has proved invaluable; the tip jets took their final approval test on it together with the rotating seals at the head. This took the form of a 25-hr. endurance run; the mechanical reliability of the head itself including bearings, hinges and control was established for an initial safe life; engines and propellers and their special controls were subjected to careful functioning tests; and the control cabin was laid out in the same pattern as the aircraft so that the pilot became thoroughly familiar with control positions and the operating techniques required. In this respect, the rig corresponds almost to a flight simulator.

Fatigue Testing

Apart from the major rig at Boscombe Down, a separate installation has been built at the Hayes factory to test the swash-plate mechanism and the hydraulic jacks. The rig was used to clear these items for an initial safe life and is now continuing with an endurance test. Orthodox fatigue tests on airframe components were carried out in a Losen Hausen machine which subjects the specimens to carefully controlled oscillating stresses. In addition, blade specimens were subjected to fatigue tests in special rigs. Simulated centrifugal forces were applied by internal struts, the specimens being freely supported and subjected to oscillations at their own natural frequency.

The aircraft with temporary fixed undercarriage began its ground resonance trials on October 25, 1957. These were completed satisfactorily and were followed by the final functional checks of the complete power plant and control system. This vitally important phase of testing was completed by November 3, 1957, and the Rotodyne flew three days later. These pre-flight trials and tests with models, ground rigs and then the complete aircraft and its equipment were among the most exhaustive ever given to a new British aeroplane.

As will be seen from the accompanying illustrations, the Rotodyne looks like a cross between a medium-range air liner and a helicopter and it does, of course, marry the capabilities of the two. With a capacity of 48 passengers or five tons of freight, it cruises at 185 m.p.h.; it has a range of 400 miles with 34 passengers or 7,000 lb. of freight, or 200 miles with 48 passengers or 9,000 lb. of freight. Its operating cost is given by the manufacturers as approximately 4d. per passenger-mile. The all-up weight is 39,000 lb.

Following a completely new line of development, the aircraft has very considerable possibilities. Its stability in flight in comparison with conventional types of helicopter will have great passenger attraction and its ability to fly between city centre and city centre at speeds of twice the ordinary helicopter and moreover in excess of that good old warhorse, the DC3, should make a worthwhile alternative to fixed-wing planes. As things are, the manufacturer is uncertain of the degree of support which it may receive, which is an unsatisfactory situation when we are striving for more British aircraft exports. The Fairey company is determined to press ahead and it may be hoped that it will get the support it deserves.

THE CHANGING SCENE

Atlantean

The greatest and most definite advance in double deck bus design for several decades. The Atlantean is a front entrance, rear-engined omnibus powered by Leyland running units.

METROPOLITAN-CAMMELL-WEYMANN LIMITED
VICKERS HOUSE, WESTMINSTER, LONDON, S.W.1
AP172

They build durability at Fort Dunlop

with Science, Accuracy and Experience

Even though thousands of tyres are made at Fort Dunlop every day, they are not mass produced. Every Dunlop tyre is individually built. It is the work of experts —working as a team and supported by the most modern machinery, materials and methods. Every Dunlop tyre is built to give you a high standard of performance in terms of mileage, safety and comfort, in fact, complete confidence to meet every driving condition.

DUNLOP built better to last longer!

ow/402

COMPANY MEETING

ODHAMS PRESS LIMITED

Continuing Popularity of Publications

THE 38th annual general meeting of Odhams Press Limited was held on June 6 in London.

Mr. A. C. Duncan, F.C.A. (the chairman), in the course of his speech, said:

Consolidated gross revenue amounted to £35,190,705, an increase of £826,805 over the previous year. Production costs and overhead charges, however, increased by £932,478. The biggest item under this heading was an increase of 5½ per cent in our wages bill. The Trading Profit, in consequence, decreased by £105,673.

After providing £1,145,301 for taxation, there is a net profit of £1,058,978, a reduction of £74,434 compared with the previous year.

The book values of the Group's assets in total are £20,573,391, representing a growth of £425,802 during the year.

The Company now owns or controls 80 publications, an increase of 12 during the year.

Our subsidiary company, Odhams (Watford) Ltd., which specialises in colour-gravure printing, has maintained the high standard of quality production which it set many years ago and has had another successful year. Practically all of the extensions to its building and plant, which were in progress last year, have now been completed and its productive capacity has accordingly been considerably increased.

The People has maintained its popularity and place among the great national Sunday newspapers, whilst *The Sporting Life* remains the recognised authority in the racing world.

The Daily Herald

The *Daily Herald* has developed a new editorial vitality and is attracting to its readership a thinking and responsible public, including increasing numbers of women and the younger generation.

Tothill Press Ltd. which is responsible for the majority of our Trade journals, has had a successful year, whilst Dean & Son, Ltd. and the Continental & Overseas Organisation Ltd. have also made satisfactory contributions to the Group's profits.

Our Book Department continues to publish a great range and quantity of books on a profitable basis.

Our Outdoor Advertising Department, the Borough Billposting Company, has made its usual contribution and it continues to provide the high standard of pictorial service which outdoor advertisers require.

Woman maintains its premier position as a weekly periodical, with the largest net sale in the world in its field.

We have recently launched another woman's paper, *Woman's Realm*, in a different price range and all the indications are that it will take its place as one of the leading periodicals of its kind in this country.

John Bull is still recognised as an outstanding magazine of good reading.

The sales of our newspapers and periodicals are still well maintained at, approximately, 22 million copies a week. The circulations, in terms of readership, are many times greater. The support of our advertisers is the best tribute to this enormous coverage.

Since reporting last year additions to our interests in South Africa and Rhodesia, we have since acquired another publishing business in Cape Town in the trade and technical field. All our interests in that part of the Commonwealth are showing satisfactory results.

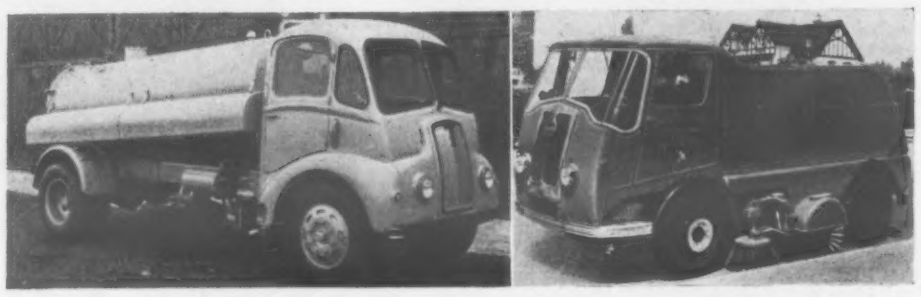
With regard to the current year, competition is becoming increasingly keen, while so far no worthwhile reduction in our prime costs have been obtainable, but we are making every effort to increase the popularity of the Company's products.

The report was adopted and the Ordinary dividend distribution of 17½ per cent for the year was approved.

PUBLIC CLEANSING VEHICLES

Exhibited At Morecambe Conference

TRADITIONALLY, the annual conference of the Institute of Public Cleansing provides opportunity for manufacturers in this field to show their wares and for prospective customers to examine specialised municipal vehicles and equipment. This year's event, which opened its four-day run at Morecambe on Tuesday, is no exception. On this page we illustrate a few of the vehicles developed for public cleansing work, generally similar to those on exhibition.



An Eagle 800-gal. cesspit emptier on a Thornycroft Swiftsure chassis and, right, a new Lewin sweeper-collector on a Perkins P4-engined Seddon chassis

On show for the first time is a Lewin road sweeper-collector which incorporates a number of new features. Named Sweepmaster, the machine is mounted on a Seddon chassis powered by the Perkins P_4 diesel engine and having a turning circle of only 33 ft. The exceptional lock permits the machine to pass parked vehicles and leave a minimum area of road unswept. The vehicle is fitted with a 170-gal. capacity water tank and a 4 cu. yd. hydraulically operated tipping body. Main and vertical sweeping brushes are hydraulically controlled and the sweeping width is variable between 6 ft. 4 in. and 7 ft. There is a vertical wire channel scarifying brush, which can also be used for back gritting. A 2 ft. 1 in. wide rotary-paddle elevator is accessible for maintenance and high-pressure water jets ahead of and behind the brushes are controllable.

The other Lewin exhibit is the Mechanical Orderly equipped with a wire channel brush which, with its small width, is designed especially to work in narrow roads and other confined spaces. This machine, which is fitted with a Perkins P_3 diesel engine and Brockhouse five-speed gearbox, is highly manoeuvrable and easily controlled by one man.

Many Diesels

Mechanical sweeping is also catered for in the Bedford display in the Bedford-Lacre sweeper-collector mounted on a 120-in. wheelbase chassis powered by the Bedford 300 cu. in. diesel engine. The machine has a turning circle of 41 ft. on both locks and is equipped with hydraulically operated front wire gutter brush and tipping 4 cu. yd. body. Both brushes are automatically maintained in close contact with the road, this control ensuring maximum brush life and clean sweeping. A 180-gal. tank supplies water under pressure to spray nozzles under the front bumper.

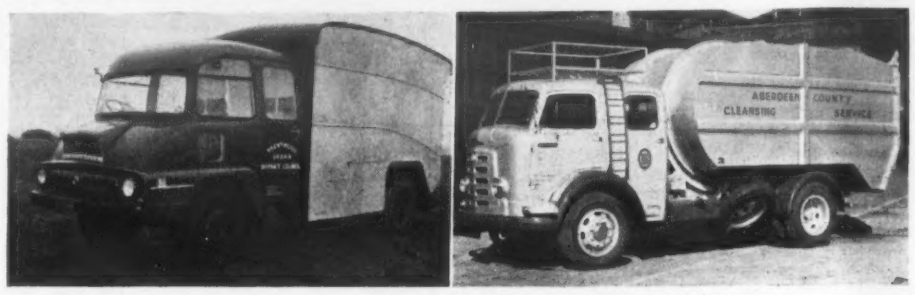
Other Bedfords include an Eagle Engineering 12-20 cu. yd. Compressmore body and Lee Motor Works six-man cab on a diesel-engined 6-ton chassis, an Eagle 500-gal. gully emptier on a Bedford petrol-engined 4-tonner and another 6-ton chassis powered by the larger petrol engine carrying the recently introduced Speedyload refuse collector body and six-man cab, both by Eagle Engineering Co., Limited. This body is designed to deal quickly with large quantities of refuse by means of revolving drums, which give a very high-density load of up to 22 cu. yd. and are also used to unload the vehicle, thus avoiding the necessity for tipping gear. A dustless loading version of the Speedyload body and bin-lifting gear are available.

The recently introduced Thames 15-cwt. chassis fitted with a 3 cu. yd. Eagle collector body is featured in the Ford exhibits and is likely to prove popular with smaller authorities. The welded steel body is fitted with two covers on each side and watertight rear doors and a hand-operated screw or hand-operated hydraulic gear tips the body to an angle of 45 deg. Bodywork by Tuke and Bell mounted on a 4-ton chassis forms another Ford exhibit. This 10 cu. yd. refuse collector is of steel with four hand-operated balanced covers, rear doors hinged vertically to fold against the sides when tipping and wheelarches shaped to avoid trapping rubbish during emptying. Also shown are a 12-20 cu. yd. Compressmore body and crew cab, and Yorkshire and Eagle gully emptiers, all on Trader 5-ton four-cylinder diesel chassis.

Karrier chassis mounting Glover, Webb and Liversidge bodywork are shown by Karrier Motors, Limited. The popular Bantam powered by the Rootes light diesel engine is combined with a 10 cu. yd. collector and seven-seat crew cab and the chrome-bore petrol-engined Bantam is the base for a 7 cu. yd. tipping collector and a Derby-type 10 cu. yd. collector with a loading height of 4 ft. 8 in. and floor clear of wheelarches. Three exhibits on Gamecock chassis, which is available fitted with either the porous chrome-bore underfloor six-cylinder petrol engine or similarly positioned Rootes two-stroke opposed-piston diesel engine, comprise a 12 cu. yd. collector and an 18 cu. yd. dual-tip collector, both with seven-seat crew cabs, and a Yorkshire 800-gal. gully emptier.

Improved Pendulum Body

A Leyland Comet and an Albion Chieftain chassis are both used by John Gibson and Son, Limited, for mounting examples of the company's improved Pendulum compression-type collector design. The Chieftain carries a 14-21 cu. yd. body and Gibson six-seat crew cab in Lanarkshire County Council livery and the Comet has an 18-27 cu. ft. body and extended Leyland-built cab to seat six and is one of three for Edinburgh Corporation. The Gibson body incorporates a pendulum hopper into which bins are emptied. Refuse emptied from the hopper is carried forward and compressed by a power ram; discharge is by hydraulic tipping. Improvements are a repositioning of the upper compression face and the hydraulic equipment, which is now under the floor away from dust and dirt, giving an ability to compress at least 24 cu. yd. of refuse into a 16 cu. yd. capacity body.



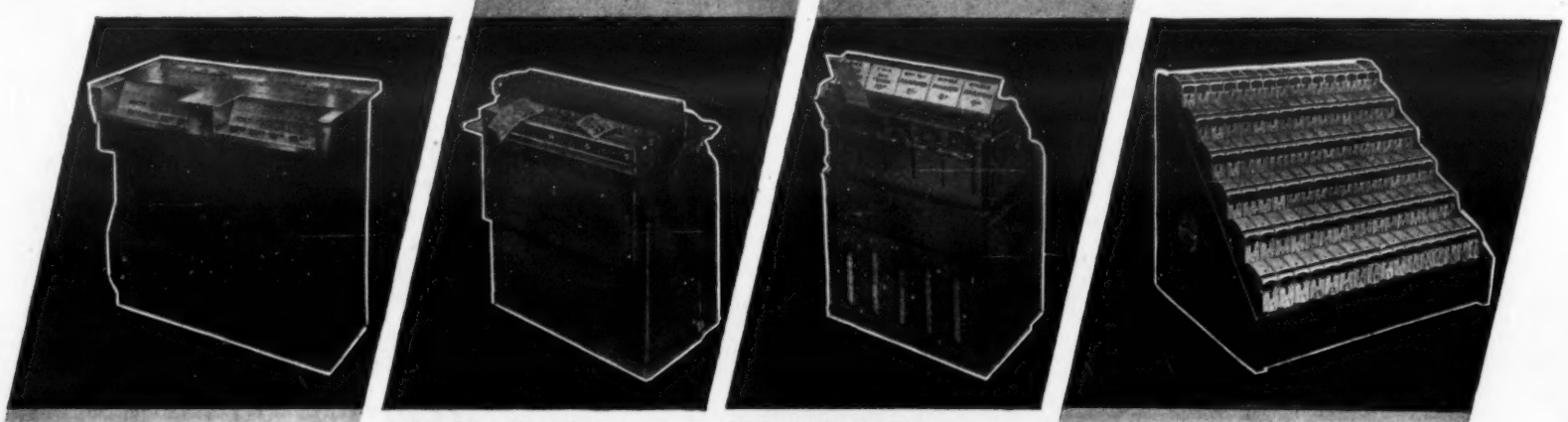
Eagle 12-20 cu. yd. Compressmore collector and six-seat crew cab on Ford Thames Trader 5-ton chassis and front end; right, Glover, Webb and Liversidge 18 cu. yd. dual-tip collector and seven-seat crew cab on Karrier Gamecock underfloor diesel chassis

The Thornycroft illustrated above is one of a number of Swiftsure chassis fitted with three different types of municipal bodywork just supplied by the company to Famagusta Corporation, Cyprus. Eagle tipping refuse collection bodies and 800-gal. cesspit emptiers, both with standard Thornycroft metal cab, comprise two types and the third is the Edbro-B. and E. tipping gear and 11 ft. 6 in. by 6 ft. 11 in. end-tipping body on a short-wheelbase chassis.

FARE COLLECTION SYSTEMS

Speed, ease, accuracy — these are the qualities everywhere associated with BELL PUNCH machines, four of which are shown here.

TOP SPEED TICKET ISSUE with BELL PUNCH



THE S.P.
For railways
Self printing for speed and accuracy, issuing 2 tickets per second.

THE SOLOMATIC
For one-man bus operation
Pre-printed coloured tickets from driver to passenger in a second — automatic overprint of stage, date, etc.

THE ULTIMATIC
For railways
Speedy issue of pre-printed coloured tickets with automatic dating.

THE BELLMATIC
For railways
Handy container units for clean, compact ticket storage.

BELL PUNCH PRODUCT

If you would like full information about these or about the many other products in the BELL PUNCH range, let us put you in touch with the BELL PUNCH distributor in your part of the world. He will gladly advise you on the BELL PUNCH method best suited to your needs.

BELL PUNCH EXPORT CO. LTD., 39 ST. JAMES'S STREET, LONDON, S.W.1. (CABLES: BELPUNCH LONDON)

TWO CENTURIES AT MIDDLETON

*Vicissitudes of Brandling's Line (Cont.)**

SMALL changes in the market prices of commodities often result in notable developments and during the latter half of the 18th century an enormous increase in the use of iron came about because in a world of rising prices its cost remained almost constant. Between 1766 and 1799 the price of iron was steady, whilst in the same period the cost of ash and oak rails advanced by 75 per cent and 35 per cent respectively. It was not surprising therefore, that the colliery turned to iron rails, although before malleable iron replaced cast iron, the cost of breakages was very heavy.

Even more profound was the effect of the price rise in animal feeding stuffs. During the 1750s this did not amount to more than 5 per cent of colliery costs but during the Napoleonic wars, when food prices rose precipitously, a horse became as expensive as a man. Eventually it was decided around 1810 to try an alternative source of motive power, with steam. So, but for the relative cheapness of iron and the costliness of horse fodder, the venturesome project of steam railway traction at Middleton might not have seen the light of day until years later.

Case for Steam

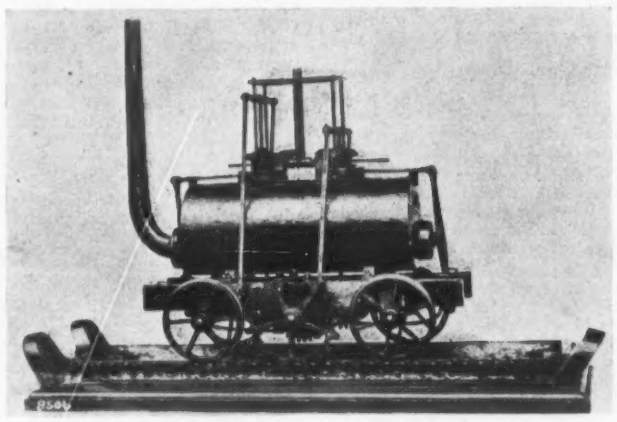
The following contemporary memorandum gives some attractive figures which clearly state the case for steam:

	£
Capital cost of 40 horses	2,000
Working cost of 40 horses	2,200
Working cost of 10 men's wages	500
Working cost of 10 boys' wages	200
Total ..	£4,900
Alternatively:	
Capital cost of five engines	2,000
Three men's wages to go with the engines..	180
One smith to clean and repair	80
Coals for three engines constantly working	150
Cost of three miles of additional rack rail (allow 20 per cent)	420
Total ..	£2,830
Amount saved by Mr. Blenkinsop's patent	£2,070

Impressive as these savings appear on paper, they were in fact almost verified at Brandling's Gosforth colliery in 1813, when the locomotive costs averaged 6¾d. per chaldron against 1s. 5¼d. for horses. John Blenkinsop, the Middleton viewer, claimed only to save 14 horses by his two engines and one-sixth of the transport costs.

Engine Working 1812-35

Soon after Blenkinsop had taken out his patent specifying the use of cogs or teeth attached to the rails in April, 1811, he proceeded to lay down the rails on the colliery wagon way and to contract with Fenton, Murray and Wood for five steam engines that would drive on the rack rail. The design, which was popularly associated with the name of Blenkinsop, was worked out by Matthew Murray, who had taken out steam locomotive patents as early as 1802. He may be regarded as the sponsor of the first commercially successful steam traction on railways and his locomotives were in use for 23 years. Murray was a genius who rose by his sheer mechanical ability from the position of a common smith, to become a partner in the firm. The engines were built in Hunslet in the Round Foundry, Water Lane, and a plaque set in the wall now commemorates the event.



A model of the original Blenkinsop rack-rail locomotive

Each engine cost £380, which included £30 paid to Trevithick in respect of patent rights. The first two engines were placed in service on August 8, 1812, and began to work regularly across Hunslet Moor from the inclined plane at the south corner of Hunslet Carr to the Old Staith at Leeds, a distance of 1¼ miles. The two engines were named *Prince Regent* and *Salamanca*—the latter in honour of the victory of July 22, 1812, in the Peninsular War. On its inaugural run *Prince Regent* hauled a train of 14 one-ton wagons each carrying 2¼ tons of coal, a gross load of 45¼ tons, to which may be added a complement of about 50 venturesome persons who clambered on. Whether or not this was representative of an average load is not clear, but the engines could do much better, as was shown on January 16, 1829, when on a demonstration run before a party of celebrated engineers, a load of 140 tons was taken at a speed of from 2 to 3½ miles an hour. A contemporary calculation estimates that they consumed 2¾ lb. of coal for every ton conveyed one mile at 4 m.p.h.

A Blow Up

The remaining three engines first went to Gosforth, where they worked until about 1817. There seems no reason to doubt that they were named *Marquess Wellesley*, *Marquess of Wellington* and *Blenkinsop*, and one became known as "Black Jack," which seems a reasonable interpretation of what the colliers thought of the Duke after Peterloo. One blew up in 1818 and another at the top of the self-acting incline at Middleton in 1834. It is said that the engineman was at dinner at the time but got up on the platform to let off steam when the accident happened. He was blown to bits—as was the engine, parts of which were found buried in the hillside some fifty yards away. At that time the line was worked by two engines, one working from Day Hole to the top of the incline at Belle Isle and the other from the bottom of The Run at the Hunslet end.

By 1831 the engines were in need of replacement and because the price of fodder had declined the colliery decided to go back to horses. Shortly after the fatal accident of 1834 the three survivors were withdrawn as in need of considerable repair and possibly too dangerous to continue working. One of them, named *Blenkinsop*, was preserved in a shed at Belle Isle and shown to visitors until 1860. She then still had the nameplate *Blenkinsop* fitted, and it has been described as two feet in length with raised brass lettering. The engine was eventually broken up; what a pity it did not escape long enough to find a haven in South Kensington!

Continuity

It is claimed that the line has always had a *Blenkinsop*. Possibly it was a horse from 1835 to 1866. In that year steam was reintroduced with a Manning Wardle 0-4-0 tank named *Blenkinsop*, and three years later this was joined by *Matthew Murray* of the same design. It is interesting to notice that these engines were of 4 ft. 1 in. gauge, but in 1881 a standard gauge 0-6-0 tank named *Blenkinsop* appeared, so that it would have been at this period when the gauge was converted. This was followed by a sister engine named *Niger* in 1902, and latterly by two powerful 0-6-0 saddle tanks. One of these, constructed by Hudswell, Clarke in 1953, is the fourth to bear the name *Blenkinsop*. This must surely constitute a record for continuity in engine names. It is of interest that close to the line are the works of Fowler, Hudswell Clarke and Hunslet, all famous names in railway traction.

Unhappily, like so many pioneer lines, Brandling's railway has now outlived its purpose, and indeed any purpose that could justify its retention. The colliery is now nationalised and no longer dependent on the Leeds market, the one surviving staith at Hunslet semi-derelict and the output waning. The great Middleton Fireclay works, once a source of traffic, now lie an abandoned ruin and more than disused siding testifies to the changing face of industry in the area. Gone are the days when the line was flanked by the belching kilns of the Leeds potteries. All that remains of that prosperity today is a derelict no-man's-land, which one day no doubt will be covered with housing estates whose occupants will never know their indebtedness to this little line that was built "for the better conveyance of coals," and thereby founded the heavy engineering industry for which Hunslet is so justly celebrated.

* First part appeared May 24

Minister on London Bus Dispute

COMMENT ON UNION REFUSAL TO ACCEPT AWARD

NEITHER party to the London bus dispute had made any comment on the minute of reference, nor the terms of reference to the Industrial Court when it was asked to arbitrate on the dispute, said the Minister of Labour, Mr. Ian Macleod, in Ealing this week. The parties therefore agreed with the terms, which commenced with the words "to determine a dispute." He made these observations because, while no one contested the right of the parties in law to disregard a decision of the court, it was the first time that a major strike had been called after a decision had been given by "the highest arbitral body in our industrial relations system." Neither party had entered any reservations.

Trade Union Tradition

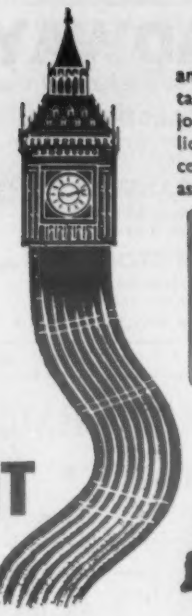
Indeed, said Mr. Macleod, if such reservations had been made in the letter of application or raised on the terms of reference, he did not think it would have been proper for him to have referred the matter to the Industrial Court and to have asked Sir John Forster, president of the court, to accept such a conditional reference. Traditionally the trade unions had sought to persuade their members to accept the awards of the court, in this case a unanimous one, even if they were unpalatable to them.

The Industrial Court was different from the Railway Staff National Tribunal, which issued recommendations and not decisions. "Nor did the validity of the Industrial Court award disappear when a strike was called. London Transport announced on the morrow of the strike that it did not consider itself bound by its terms, for example whether the award of 8s. 6d. to the Central bus crews should start from March 12, the date named by the court. But it had sought to base its proposals for settling this unhappy dispute on the unanimous decision of the court."

The Secret Ballot

The meetings which had culminated in those under the Prime Minister's chairmanship put forward a three-point plan based on the arbitration award. In later discussions these points were given "a wide and generous interpretation" by Sir John Elliot, chairman of the London Transport Executive. The Government had not demanded unconditional surrender and it was wrong to talk about a trial of strength. He thought the secret ballot would greatly increase the number of strikes—that was the experience in other countries.

Now is the time to GET THINGS STRAIGHT



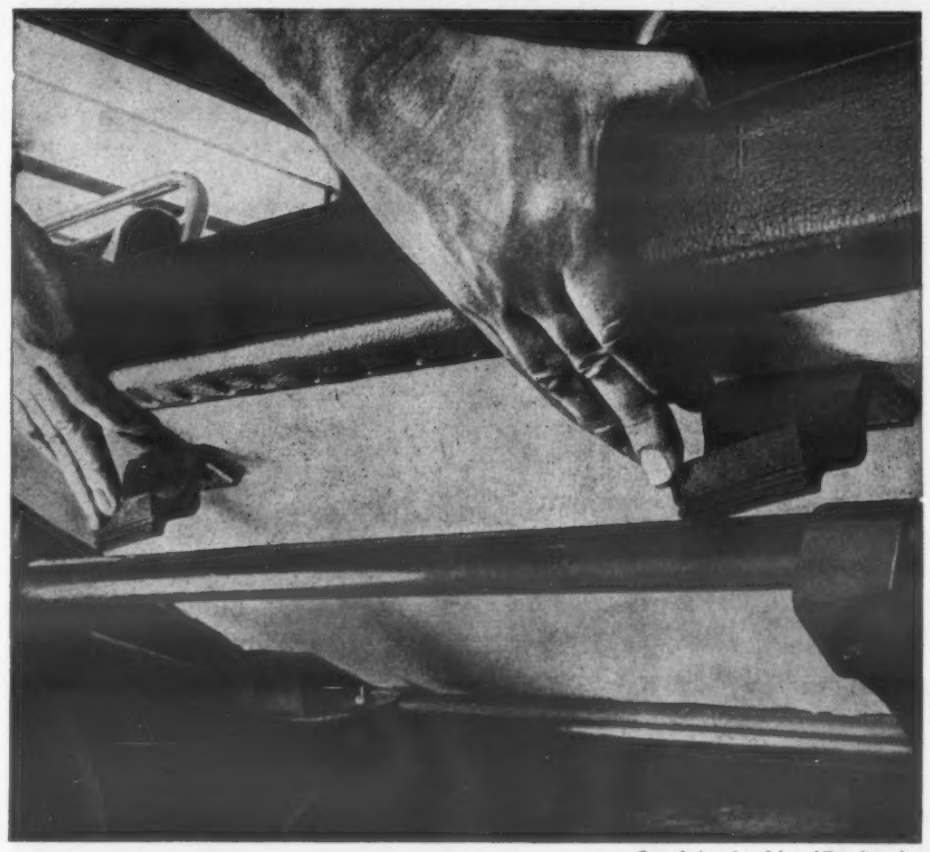
and the straight fact is that there's a Bawn tanker tailor-made for every liquid moving job. Petrol, chemicals, oil, hot liquids, cold liquids—our tankers cope with them all, conveying at normal or maintained temperatures as required. For years we've taken the worry out of the tricky job of moving liquids. Why not give us a ring?

W·B·BAWN
& COMPANY LIMITED
Byron Works, Blackhorse Lane, London, E.17
Telephone: LARkswood 4411/4

D.1
ALSO MANUFACTURERS OF "HELMSMAN" STEEL EQUIPMENT AND STEEL PLATE FABRICATIONS

OUT OF PRINT

We regret to announce that the three very successful MODERN TRANSPORT publications "Practical Railway Operating," "British Railway Operation" and "Unification of British Railways" are completely out of print.



Seat being fitted into 'Bus interior

ON-OFF, ON-OFF

The "Flexilant" Grip makes anything to which it is fixed, instantly and automatically attachable, detachable and replaceable. It is rigid and firm—self-placing and hygienic. It is simple, inexpensive and as long-lasting as the part to which it is fitted. Here is an example of its use—have you a similar need?

THE "*Flexilant*" GRIP
PROV. PAT. NO. 16783/55
can help your fixing problems

RUBBER BONDERS LIMITED · DUNSTABLE · BEDFORDSHIRE · ENGLAND

SILVER ROADWAYS LTD.

Reliable Trunk Services to all Parts

EXETER
Peamore Garages, Alphington
KENNFORD 405

BIRMINGHAM
323 High St., West Bromwich, Staffs.
WEST BROMWICH 2801

LLANELLY
Morfa Works, Llanelly
LLANELLY 4302

CARDIFF
10 Dumfries Place
CARDIFF 21631

SWANSEA
Exchange Buildings
SWANSEA 54171/5

BRISTOL
70 Prince Street
BRISTOL 22315

GLASGOW
12 Dixon Street, C.2
CITY 3361

LIVERPOOL
11 Old Hall Street, Liverpool, 3
CENTRAL 6386

NOTTINGHAM
Pavilion Building, Pavilion Road
West Bridgford
NOTTINGHAM 83461

LONDON 22-24 Bermondsey Wall West, S.E.16 *BERmondsey 4533*

PICKFORDS HEAVY HAULAGE SERVICE

Abnormal Loads • Lifting

MOBILE CRANES FOR HIRE • Branches in all large towns

PASSENGER ROLLING STOCK

NINETEENTH CENTURY RAILWAY CARRIAGES

By HAMILTON ELLIS

FROM MODERN TRANSPORT: **22s.**

TARPAULINS

BUY DIRECT FROM THE MANUFACTURERS

All covers double sewn seams with best flax thread. Eyelets fitted in reinforced patches, ropes spliced in.

New Green Proofed Flax Tarpaulins Quality No. 222. Waterproofed and tear resistant New Flax Canvas at second-hand prices — Satisfaction Guaranteed. A light pliable waterproof sheet in useful sizes.

8½ x 6 ft.	£1.10.0d.	16 x 13 ft.	£5.15.0d.
13 x 8 ft.	£2.17.6d.	18 x 13 ft.	£6.10.0d.
13 x 10 ft.	£3.12.6d.	19½ x 14 ft.	£7.10.0d.
13 x 12 ft.	£4. 6.0d.	19 x 16 ft.	£8.10.0d.
14 x 13 ft.	£5. 1.6d.	19 x 18 ft.	£9.10.0d.

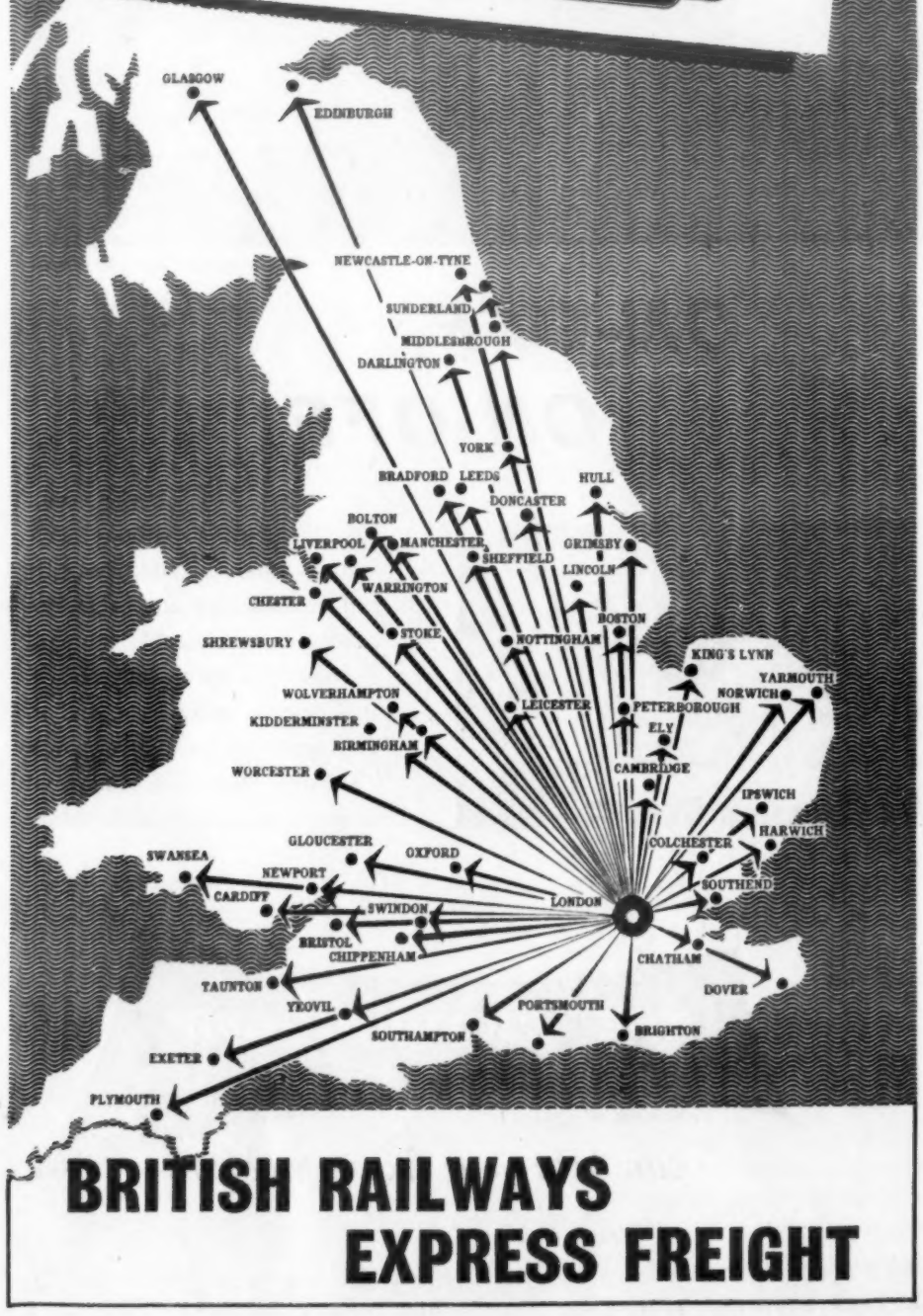
All approximate sizes. IMMEDIATE STOCK DELIVERY
Lettered with your name 5/- extra. Carriage paid on £12.0.0 value.

YEO BROS. PAULL LTD. (Dept. MT)
North Street, Bristol, 3. *Tel.: Bristol 64294-5-6*

NEXT-DAY DELIVERY BY EXPRESS FREIGHT

This map shows some of the many towns to which British Railways Express Freight Services can give next-day delivery for wagon-load traffic. It is a time-table service—and door-to-door transport can be provided. Express Freight charges are competitive with any other form of transport. For further information get in touch with your local Station-master or Goods Agent. He'll supply you with all the details you need.

BRITISH RAILWAYS



BRITISH RAILWAYS
EXPRESS FREIGHT

IMPORTANT CONTRACTS

More Multiple-Unit Diesel Trains

ORDERS have been placed with two manufacturers by the British Transport Commission for 217 diesel multiple-unit train vehicles comprising 56 three-car sets, 24 two-car sets and one powered car, for use in the Eastern, North Eastern and Scottish Regions of British Railways. An order placed with Metropolitan-Cammell Carriage and Wagon Co., Limited, is for 46 three-car sets, each consisting of one motor brake open second-class and one motor open composite, both fitted with two B.U.T. 150-h.p. engines, and one trailer open composite, for use in the North Eastern Region (20 sets) and Scottish Region (26 sets), and 10 three-car sets, each consisting of one motor brake open second-class and one motor open composite, both fitted with two Rolls-Royce 180-h.p. engines, and one trailer open second-class buffet car, for use in the North Eastern Region. An order with Cravens, Limited, is for 24 two-car sets, each consisting of one motor brake open second-class, fitted with two B.U.T. 150-h.p. engines, and one driving trailer open composite, for use in the Eastern Region (2 sets) and Scottish Region (22 sets), and one motor brake open second-class vehicle fitted with two B.U.T. 150-h.p. engines for the North Eastern Region.

Large Indian Order for Buses

Uttar Pradesh Roadways, a transport concern that serves the most populous of the Indian States, has placed an order for 100 British-designed Indian-built buses with Ashok Leyland, Limited, Madras. The order is for 90 Leyland Comet and 10 Leyland Tiger Cub single-deck buses. The Tiger Cubs will be the state's first underfloor-engined buses and are for intercity operation. An unusual fitment on the 100 buses will be tachograph equipment instead of speedometers, intended to prevent rash driving and to economise on fuel.

Pine Sleepers for New Zealand

Investigations which have taken more than 20 years have culminated in the New Zealand Railways Department calling for tenders for the supply of 100,000 treated radiata pine sleepers. The order will represent one-quarter of the number of sleepers the department uses each year. In the past sleepers have been of hardwood imported from Australia. The order is really a large-scale experiment, though the investigations have shown that, in durability, treated radiata will outlast hardwoods but its spike-holding capacity is a long way behind. Consequently, screw spikes will be used instead of dog spikes. Overall, the radiata sleepers should be cheaper than imported hardwood sleepers.

British Oxygen Linde Plants Near Completion

The new tonnage oxygen plant supplied by British Oxygen Linde which is being erected at Shell Haven on the Thames Estuary by British Oxygen Engineering, Limited, is expected to be fully commissioned in August. The plant is designed to produce 240 tons of oxygen and 235 tons of nitrogen a day for the manufacture of ammonia. Another British Oxygen Linde plant at Partington, Lancashire, is being built for Petrochemicals, Limited, and is capable of supplying 145 tons of oxygen and 55 tons of nitrogen a day. The oxygen will be used for the direct oxidation of ethylene and this plant is also expected to come into service in August. The combined value of the contracts for these two plants is estimated to be more than £500,000.

TENDERS INVITED

THE following items are extracted from the Board of Trade Special Register Service of Information. Inquiries should be addressed, quoting reference number where given, to the Export Services Branch, Board of Trade, Lacon House, Theobalds Road, London, W.C.1.

June 20—Union of South Africa.—South African Railways for two 50-d.h.p. (min.) diesel CRAWLER TRACTORS. Tenders, endorsed "Tender No. F.7326: Crawler Tractors," to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. (ESB/13597/58.)

June 20—Union of South Africa.—Cape Provincial Administration for up to 20 heavy-duty two-axle petrol-engined LORRIES for use as WATER TANKERS on road construction, with a capacity of not less than 1,200 gal. Tenders through local agent to the Cape of Good Hope Provincial Administration. (ESB/14332/58.)

June 20—Union of South Africa.—South African Railways for 30 2-ton, seven 3-ton and one 5-ton FORK-LIFT TRUCKS. Photocopies of tender documents from Export Services Branch, B.o.T., price 19s. (ESB/14193/58.)

June 23—Burma.—Union Purchase Board for 50 5.00-16 4-ply TYRES, 1,000 7.50-20 12-ply TYRES with TUBES, 300 7.50-20 10-ply TYRES with TUBES, 200 6.00-16 6-ply TYRES with TUBES, four 6.00-10 TYRES with TUBES, 24 4.50-17 TYRES with TUBES and four 13.00-24 TYRES. Tenders to the Director-General, Union of Burma Purchase Board, St. John's Road, Rangoon. (ESB/14545/58.)

June 23—Ceylon.—International Co-operation Administration for eight steel-bodied 4-passenger or 5-cwt. DUAL-PURPOSE VEHICLES. Tenders to the Chairman, Tender Board, Ministry of Agriculture and Food, Tender No. ICA 165, P.O. Box No. 569, Colombo 2. (ESB/13810/58/ICA.)

SHIPPING and SHIPBUILDING

Irish Rates Inquiry Continues

RECALLED before the cross-channel freight rates tribunal sitting in Dublin to inquire into freight rates on the Irish Channel shipping routes, Mr. J. W. Read, assistant director of accounts, B.T.C., was asked to comment on the allegation that the cross-channel livestock trade was subsidising general goods traffic. Mr. Read said there was no indication in the B.T.C. accounts from which he could possibly say whether cargo subsidised livestock or vice versa. Also recalled, Mr. M. C. Richins, freight officer, British Railways, told the tribunal in regard to exceptional rates: "When we reduce our rates we do it for hard commercial reasons. There is no sentiment about the business and there is certainly no question of Government policy being involved."

Clyde Graving Dock

IT is understood that an application for a Treasury loan for the construction of a large graving dock on the Clyde at Greenock awaits only the completion of the detailed survey of costs initiated by the sponsors, the Inchgreen Investigating Co., Limited, and an official announcement is expected within a few weeks. The site of the dock is virtually settled. The shipbuilding and shiprepairing companies behind the project favour the Great Harbour at Greenock, and it is understood that those who previously favoured an alternative site at Battery Park, Greenock, have agreed not to press their views so that the project can be started without delay.

Help for Indian Owners

THE nature and extent of help rendered by the Government of India during the first five-year plan to encourage the development of Indian shipping has been disclosed in a statement by Mr. Raj Bahadur, Indian Minister for Shipping. The statement said that a scheme for grant of loans to Indian shipping companies on easy terms to enable them to acquire ships for operation in the coastal and overseas trade was instituted in 1951. The interest charged on such loans is 4 to 4½ per cent per annum in the case of loans for the purchase of coastal ships and 2½ per cent in the case of overseas ships. Ships built at the Vishakapatnam shipyard in India are still being sold to Indian shipping companies at what is called United Kingdom parity prices. The price is very roughly about 20 per cent less than the actual construction cost.

Tax concessions such as higher initial depreciation, double depreciation and exemption of profits up to 6 per cent of the capital cost are allowed to Indian shipping companies in respect of newly acquired ships. The purely coastal trade of India in dry cargo has been reserved exclusively for Indian shipping. Meanwhile, informal discussions have taken place in New Delhi between representatives of the Government of India and shipping interests on ways and means of utilising American credit (possibly $25 million) likely to be made available for the acquisition of additional shipping tonnage.

GATWICK AIRPORT

(*Continued from page 3*)

Down either side of the runway the edge of the concrete is marked at 200-ft. intervals by a line of white lights visible in all directions. In poor visibility much brighter lights are brought into use directed to shine towards the aircraft as it makes its approach and landing. A line of green lights runs across each end of runway to mark the threshold, with a 75-ft. gap free of light in the middle. The location of the threshold is additionally emphasised by a wingbar of four green lights on either side; 1,000 ft. down the runway from the threshold there are similar white wingbar lights of high intensity. The green and white wingbars assist the pilot coming in to land to judge the angle of descent in order to touch down between the two sets.

Although landings in low visibility are aided by radio and radar, as well as the special lighting described above, pilots have found that on nearing the threshold of the runway they seem to run into a pool of darkness when the guidance given by the crossbar approach lights disappears beneath the nose of the aircraft. Brightening the runway lights may only make matters worse, particularly in mist or rain. As a result of full-scale experiments an entirely novel form of inset lighting has been installed on the runway itself at Gatwick for the first 3,000 ft. The runway is kept clear of all lights along a central strip 75 ft. wide corresponding with the gap in the threshold lights, but on either side short transverse bars of four lights set in the concrete of the runway at 250-ft. intervals help to illuminate the touch-down zone.

OFFICIAL NOTICES

SALISBURY UNITED OMNIBUS CO., LIMITED
(Salisbury—Southern Rhodesia)

O.T.C. ROAD SERVICES, LIMITED
(Nairobi—Kenya Colony)

VACANCIES FOR TRAFFIC MANAGERS

THE above companies which operate stage carriage and express services in Rhodesia and East Africa, invite applications from Traffic Managers who have had previous experience.

The Salisbury Company operates approximately 100 buses and coaches, and the Nairobi Company operates approximately 50 buses on long-distance services.

The position offers considerable scope for initiative and the commencing salary will depend on the qualifications and experience of the selected applicant.

Applications, which will be treated in strict confidence, should be sent to:

The Secretary,
United Transport Co., Limited,
Mounton Chambers,
Chepstow, Mon.

by June 30, 1958, and should include the following particulars:

1. Name and address.
2. Age.
3. Whether single or married and, in the latter case, the number and ages of any children.
4. Education.
5. Training.
6. Professional or technical qualifications.
7. Brief statement of present and previous appointments arranged chronologically.
8. Present salary.

WEST PAKISTAN ROAD TRANSPORT BOARD

CHIEF TECHNICAL OFFICER

WANTED a Chief Technical Officer in the grade of Rs.1,500—50—2,000 for the West Pakistan Road Transport Board.

FOREIGNERS.

QUALIFICATIONS—Degree in Automobile Engineering or Mechanical Engineering from a recognised University in Europe.

EXPERIENCE—At least 15 years' experience in maintenance and repair of vehicles and should have adequate experience in designing and building of bodies, administration of workshops and wide administrative experience of controlling technical staff and handling store organisations.

PAY—Rs.2,000/- (two thousand) only P.M.

OVERSEAS PAY—£30 (thirty pounds) P.M.

ACCOMMODATION—A free house suitable to his status.

CONVEYANCE—Free conveyance.

MEDICAL AID—Free medical treatment by the Board's doctor.

DURATION OF SERVICE—On four years' contract.

LEAVE—One month's leave on every eleven months' duty.

OTHER CONCESSIONS—

(1) Free passages for himself and wife on joining the post.
(2) Free passage after termination of the contract, for self and wife.
(3) One return passage once in two years during the currency of the contract.

Applications duly supported by testimonials should reach the Secretary, West Pakistan Road Transport Board, 1 Mozang Road, Lahore, Pakistan, by July 30, 1958.

SOCIAL AND PERSONAL

Opening of Gatwick Airport

FOLLOWING the opening by H.M. the Queen of Gatwick Airport on Monday this week, British European Airways inaugurated its operations from the new airport with an aircraft, chartered to Surrey County Council, leaving to Jersey and Guernsey. It conveyed a message of goodwill from the Council to the States of Jersey and Guernsey, the islands' Parliaments. The Queen had flown from London Airport for the inaugural ceremony, at which the Minister of Transport welcomed her. (Description of new airport on page 3.) This week, Lord Douglas of Kirtleside, chairman of B.E.A., said that authority had already been received to operate between London, Gatwick and Southend airports and it was hoped that helicopters would be employed.

* * *

Mr. A. E. C. Drake, C.B.E., joins the board of the British Petroleum Co., Limited, on July 1 and Mr. J. Houston Jackson becomes managing director of the B.P. Tanker Co., Limited.

* * *

Mr. Kenneth D'Alby, M.B.E., hitherto assistant dock superintendent at Middlesbrough Docks, has been made docks manager at Barrow and Silloth B.T.C.-owned docks. He succeeds the late Mr. J. G. Thomas.

* * *

The annual Thames sailing barge race, shortened this year to a 25-mile course because of light winds, was won by the 52-year-old *Veronica* (56 tons), of F. T. Everard and Sons, Limited, and another Everard barge, the *Sara*, was second. Last year's winner, the *Sirdar* (London and Rochester Trading Co., Limited) came third.

* * *

Mr. A. M. Robertson, who has been made managing director of the National Benzole Co., Limited, was educated at Malvern and Pembroke College, Cambridge. He joined the former Anglo-Iranian Oil Co., Limited (now the British Petroleum Co., Limited) in 1937. From 1939 to 1946 he served with the Royal Army Service Corps in North Africa and Italy, where he was mentioned in dispatches. Mr. Robertson rejoined B.P. in 1946 and until 1949 was at the head office in charge of marketing development in various overseas territories. In 1949 he was seconded to the French associates in Paris as manager and subsequently assistant general manager. Mr. Robertson returned to the head office of British Petroleum in 1953 as area manager for Germany, Switzerland and Austria. In 1954 he joined Shell-Mex and B.P., Limited, and was appointed general manager of Scottish Oils and Shell-Mex, Limited, the following year. He became general manager of National Benzole last year.

Mr. A. M. Robertson

* * *

Two senior members of the sales organisation of Pirelli, Limited, were the recipients recently of long-service awards. They were Mr. W. M. Frizell, assistant to the chief executive tyre sales, and Mr. F. Briggs, divisional manager, south.

* * *

Mr. Arthur Makin, director and secretary of Marshall Sons and Co., Limited, Gainsborough, and director of a number of its subsidiary and associated companies, will resign these appointments with effect from June 30. His services will be retained in an advisory capacity. He is succeeded as secretary by Mr. F. J. Wallace, F.C.I.S.

* * *

Sir Wavell Wakefield, M.P., has been elected president of the Industrial Transport Association for the ensuing year. The vice-presidents are Messrs. J. J. Brown, W. G. Gee, L. H. Hopkins, C. E. Jordan, M.Inst.T., T. V. Redston, F. H. Wells, W. G. Widnall. The chairman is Mr. A. L. Bagley, M.Inst.T., and the vice-chairmen Messrs. C. A. Elliott and G. L. Eades.

* * *

The South Western section of the Institute of Transport has elected as chairman for the 1958-59 session Mr. W. H. Geere, assistant general manager, Devon General Omnibus and Touring Co., Limited. The vice-chairmen are Messrs. L. J. Crook, traffic manager of the same company, T. L. C. Strange, its general manager, and T. H. Smart, Plymouth City Transport.

* * *

The United Steel Companies, Limited, announces that Lt.-Cdr. G. W. Wells, D.L., at present managing director (engineering works) has been appointed managing director (production) responsible to the general managing director, Mr. A. J. Peech. Commander Wells will continue to hold the position of general manager of Appleby-Frodingham Steel Co., Limited, Scunthorpe, a branch of United Steel.

* * *

First prize in the 1958 drawing competition set by the Institute of British Carriage and Automobile Manufacturers for a high-capacity single-deck bus body has gone to Mr. D. G. Thaxter, of Mill Hill. This is worth £90 and also confers the gold medal of the Worshipful Company of Coach Makers. Mr. Thaxter also gains the additional award of hotel and travelling expenses for a visit to a Continental vehicle exhibition. A draughtsman employed by Duple Motor Bodies, Limited, he has now won four first prizes and will not be eligible to enter the competition next year. For an outline drawing of a 5-ton dropsided lorry body and cab first prize (£25) went to Mr. H. W. Mann, of New Barnet.

The Society of Licensed Aircraft Engineers has just introduced into use a presidential badge of office, a gift to the Society subscribed by a number of its honorary members and by the members of two overseas branches, at Singapore and Lagos.

* * *

Mr. J. A. G. Bowen has been appointed managing director of the Barbados Transport Board, a government agency which operates a fleet of nearly 70 buses. Mr. Bowen was formerly on the engineering staff of B.E.T. group companies.

* * *

Count Louis de Liedekerke recently expressed his intention of resigning the post of general secretary of the Union of International Public Transport (U.I.T.P.) but he has been appointed hon. general secretary. His assistant, Monsieur André Jacobs, assumes the secretaryship in his stead.

* * *

Mr. Toru Hagiwara, Japanese Ambassador to Canada, has been elected president of the eleventh session of the International Civil Aviation Organisation assembly, which is now meeting at I.C.A.O. headquarters in Montreal. He will also serve as chairman of the assembly's executive committee.

* * *

Mr. Ronald Wade, assistant traffic manager of Cumberland Motor Services, Limited, has been appointed assistant traffic manager of the Eastern National Omnibus Co., Limited. He succeeds Mr. L. J. Quilter, who, as already announced, was recently appointed traffic manager of that company.

* * *

Mr. G. W. Rose, O.B.E., T.D., A.M.I.Mech.E., has joined the board of Fisher and Ludlow, Limited, (a B.M.C. company) as deputy managing director. He has been general works manager of the Austin Motor Co., Limited, since 1955. Mr. J. R. Moore has joined Fisher and Ludlow as quality controller. Mr. W. H. Davis, A.M.I.Mech.E., becomes general works manager at Longbridge.

* * *

Mr. A. C. West, O.B.E., hitherto Chief Constable of Portsmouth, has been appointed to the new post of Chief Constable of the British Transport Police and will take up his appointment on July 7. His appointment flows from the decision to reorganise the British Transport Police as a unified force with a single head and a clear chain of command (MODERN TRANSPORT, February 15). Mr. West joined the Hampshire County Constabulary in 1921. After serving in all ranks, he became county divisional superintendent in 1937 and was appointed Chief Constable of Portsmouth in 1940. He has been hon. secretary of the Association of Chief Police Officers of England and Wales since 1947, and is a member of the Police Council of Great Britain; the Home Office Police War Duties Committee; the Central Conference of Chief Constables of England and Wales; the Ministry of Transport Road Safety Committee, and the public relations committee of the International Association of Chief Police Officers of the U.S.A. He has also been vice-president of the Portsmouth Accident Prevention Council. Mr. West holds the Queen's Police Medal and the Order of St. John of Jerusalem.

Mr. A. C. West

* * *

Mr. W. I. Scott-Hill, M.Inst.T., A.R.Ae.S., traffic manager of British European Airways since 1953, has been appointed to the new post of general manager (traffic). He joined B.E.A. in its early days and was regional manager (overseas) before becoming traffic manager. Mr. R. G. Gibbons, M.Inst.T., formerly B.E.A. assistant traffic manager, succeeds him as traffic manager.

* * *

Mr. A. H. Earley has now resumed his duties as chief ports manager of the East African Railways and Harbours on return from six months in the Far East, where, at the request of the World Bank in Washington, he took part in an economic survey. The mission was specially concerned with preparing a national investment programme for Thailand. Investment in transport and communications is likely to require more capital than any other single economic activity.

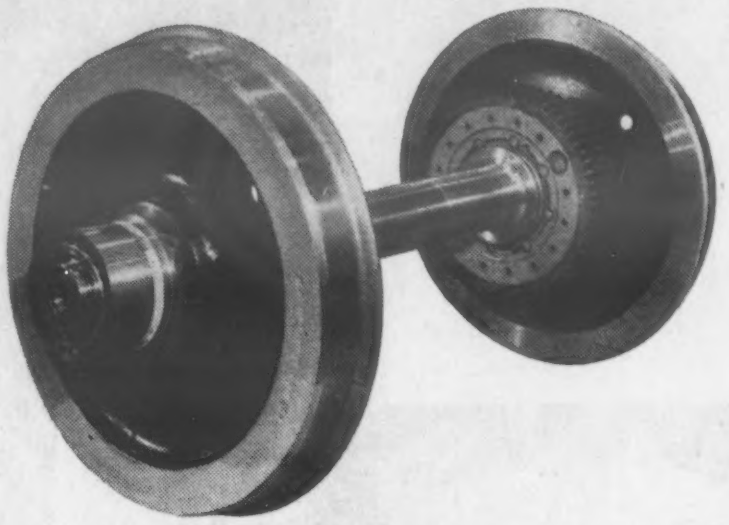
* * *

On Tuesday this week, Sir Alexander McColl was entertained to luncheon by Mr. J. C. Gridley, chairman of the Mobil Oil Co., Limited, and his fellow directors. The occasion marked the 80th birthday of Sir Alexander, who has had a long and distinguished career in the world of commerce, particularly in the British petroleum industry. He was made chairman of the then Vacuum Oil Co., Limited (now Mobil Oil) in 1936, having been a director since 1919.

* * *

In common with many other large undertakings, London Transport is considering the application of electronic data processing (E.D.P.) techniques to the administrative work of the organisation. A small committee of senior officers has been set up to advise the Executive on the matter. Last year an E.D.P. unit was formed and has lately been strengthened. The functions of the unit are to acquire specialised knowledge of E.D.P., to place that knowledge at the disposal of the committee of senior officers and any study groups that may be set up to examine particular projects, and to secure effective liaison between the Executive and the manufacturers of E.D.P. equipment.

STEEL, PEECH & TOZER
A Branch of The United Steel Companies Limited. THE ICKLES, ROTHERHAM, YORKSHIRE



RAILWAY WHEELS, AXLES, TYRES, SPRINGS, FORGINGS

As one of the principal makers of steel railway materials in the Commonwealth, Steel, Peech & Tozer are playing an important part in the modernization schemes of British Railways and of railways overseas. Of their total production of 100,000 tons per annum of railway materials—steel wheels, axles, tyres, springs and forgings, and finished wheel and axle sets produced at the adjoining plant of Owen & Dyson Limited, some 30,000 tons are exported to railways in five continents. Seventy years' manufacturing experience and a constant search for new methods ensure the reliability and excellence of these materials.

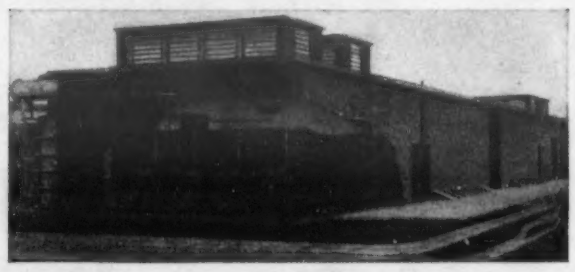
Steel, Peech & Tozer a branch of THE UNITED STEEL COMPANIES LTD
SP 209

IN TRACTION SERVICE IN 18 COUNTRIES ... Hewittic RECTIFIERS

the converting plant used by the World's principal railways

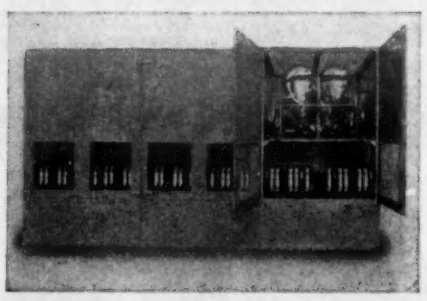
BRITISH RAILWAYS
SOUTHERN REGION

One of 28 substations being equipped with Hewittic Rectifiers by the British Transport Commission for the Southern Region of British Railways. The photograph shows Wimbledon substation with one wall cut away to show the two 2,500 kW rectifiers in this half of the building.



LONDON TRANSPORT RAILWAYS

The 4,000 kW Bond Street substation, equipped exclusively with Hewittic Rectifiers. The plant comprises four 1,000 kW combined rectifier and enclosed air-cooled transformer units. This company is also responsible for the supply and installation of all A.C. and D.C. control gear. Some 90,000 kW Hewittic Rectifiers have been supplied to the London Transport Executive.



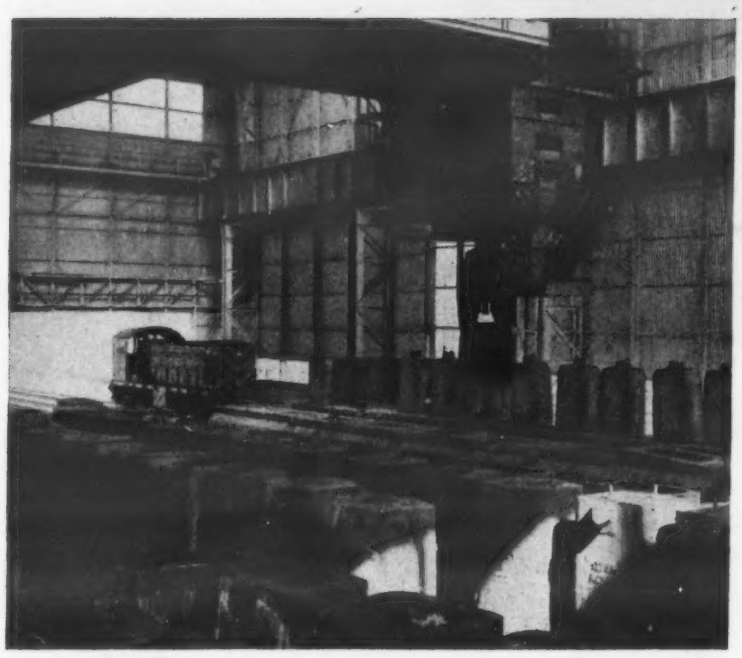
CANADIAN NATIONAL RAILWAYS

The electrified section of the Canadian National Railways, comprising some 70 track miles in the vicinity of Montreal Terminal is supplied with D.C. by Hewittic Rectifiers in two 3,000 kW substations at Central Station and Saraguay. The photograph shows one of the four 1,500 kW equipments in service. These are designed for operation at 3,000 volts, D.C.

HACKBRIDGE AND HEWITTIC ELECTRIC CO., LIMITED
WALTON-ON-THAMES - SURREY - ENGLAND
Telephone: Walton-on-Thames 760 (8 lines) Telegrams: "Electric, Walton-on-Thames"

Overseas Representatives: ARGENTINA: H. A. Roberts & Cia, S.R.L., Buenos Aires. AUSTRALIA: Hackbridge and Hewittic Electric Co., Ltd., 171 Fitzroy Street, St. Kilda, Victoria; N.S.W., Queensland, W. Australia: Elder, Smith & Co., Ltd.; South Australia: Parsons & Robertson, Ltd.; Tasmania: H. M. Bamford & Sons (Pty.), Ltd., Hobart. BRAZIL: Oscar G. Mors, São Paulo. BURMA: Neonlite Manufacturing & Trading Co., Ltd., Rangoon. CANADA: Hackbridge and Hewittic Electric Co. of Canada, Ltd., Montreal; The Northern Electric Co., Ltd., Montreal, etc. CEYLON: Envee Ess, Ltd., Colombo. CHILE: Sociedad Importadora del Pacifico, Ltda., Santiago. EAST AFRICA: Gerald Hoe (Lighting), Ltd., Nairobi. EGYPT: Giacomo Cohenca Fils, S.A.E., Cairo. FINLAND: Sähkö-ja Koneliike O.Y. Hermes, Helsinki. GHANA, NIGERIA AND SIERRA LEONE: Glyndova, Ltd. NETHERLANDS: J. Kater E.I., Ouderkerk a.d. Amstel, Amsteldijk Noord 105c. INDIA: Steam & Mining Equipment (India) Private, Ltd., Calcutta; Easun Engineering Co., Ltd., Madras, 1. IRAQ: J. P. Bahoshy Bros., Baghdad. MALAYA, SINGAPORE AND BORNEO: Harper Gilfillan & Co., Ltd., Kuala Lumpur. NEW ZEALAND: Richardson, McCabe & Co., Ltd., Wellington, etc. SOUTH AFRICA: Arthur Trevor Williams (Pty.), Ltd., Johannesburg, etc. CENTRAL AFRICAN FEDERATION: Arthur Trevor Williams (Pty.), Ltd., Salisbury. THAILAND: Vichien Phanich Co., Ltd., Bangkok. TRINIDAD & TOBAGO: Thomas Peake & Co., Port of Spain. TURKEY: Dr. H. Salim Öker, Ankara. U.S.A.: Hackbridge and Hewittic Electric Co., Ltd., P.O. Box 234, Pittsburgh 30, Pennsylvania. VENEZUELA: Officina de Ingenieria Sociedad Anonima, Caracas.

Molten iron being charged into an open hearth furnace at Abbey Works



The ingot stripper bay at Abbey Works

One-third of Britain's SHEET STEEL is made by

THE STEEL COMPANY OF WALES LIMITED

The slabbing mill motor room at Abbey Works

ENQUIRIES
to The Sales Manager:
Sheet and Plate—
Abbey Works,
Port Talbot,
Glamorgan.
Electrical Sheet—
Orb Works,
Newport,
Monmouthshire.

Printed by Odhams (Watford) Limited, St. Albans Road, Watford, Herts, for and published by, Modern Transport Publishing Co., Limited, Russell Court, 3-16 Woburn Place, London, W.C.1.